STATE OF MINNESOTA DISTRICT COURT
COUNTY OF RAMSEY SECOND JUDICIAL DISTRICT

- -

The State of Minnesota,
by Hubert H. Humphrey, III,
its attorney general,
and
Blue Cross and Blue Shield
of Minnesota,

Plaintiffs,

vs. File No. C1-94-8565

Philip Morris, Incorporated, R.J.
Reynolds Tobacco Company, Brown &
Williamson Tobacco Corporation,
B.A.T. Industries P.L.C., Lorillard
Tobacco Company, The American
Tobacco Company, Liggett Group, Inc.,
The Council for Tobacco Research-U.S.A.,
Inc., and The Tobacco Institute, Inc.,

Defendants.

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(The following is the continued deposition of ROBERT D. VERHALEN, M.D., P.H., taken pursuant to notice, at the offices of Dorsey & Whitney, Pillsbury Center South, 220 South Sixth Street, Minneapolis, Minnesota, commencing at approximately 8:45 o'clock a.m., September 4, 1997.)

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I N D E X

Robert D. Verhalen, M.D., P.H.
Adverse Examination
by Mr. Love (Cont'd) 217 - 317

P L A I N T I F F S '
D E P O S I T I O N E X H I B I T S

3307 - AJE article 227
3308 - AJPH article 240
3309 - JASA article 265
3310 - JESM article 268
3311 - Foster report 299
3312 - MMWR article 311

ADVERSE EXAMINATION
BY MR. LOVE (CONT'D):

00:00:00 Q. Good morning, Dr. Verhalen.
08:51:41 A. Good morning.
08:51:43 Q. How are you today?
08:51:43 A. Fine. Thank you.
08:51:44 Q. You understand that you are still under oath
08:51:45 just as yesterday and this is a continuation of your
08:51:48 deposition as an expert witness in this case?
08:51:51 A. Yes, I do.
08:51:53 Q. Dr. Verhalen, do you agree that smoking is a
08:51:54 substantial factor in the development of lung cancer
08:51:58 in some people?
08:52:02 A. It may be, yes.
08:52:04 Q. And perhaps to be efficient about this, when you
08:52:08 add the words "may be" to my statement, is this the
08:52:14 same discussion we had yesterday about causation?
08:52:21 A. Yes, it is.
08:52:24 Q. So when I use the words "cause or substantial
08:52:24 factor of a development in the disease," it's your
08:52:28 opinion that the most anyone can say about that is
08:52:31 that smoking may be a substantial factor in the
08:52:34 development of a particular disease?
08:52:39 A. That's correct, on the basis of information
08:52:40 currently available so far as I know.
08:52:43

08:52:47 Q. And it's also your opinion that, for example,
08:52:52 smoking may not be a substantial factor in the
08:52:55 development of lung cancer in people?

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08:52:59 4 A. That is conceivable, that's correct.
08:53:02 5 Q. Is it conceivable that smoking is not a
08:53:06 6 substantial factor in the development of lung cancer
08:53:12 7 in anyone?
08:53:13 8 A. That's conceivable although perhaps not so
08:53:16 9 likely.
08:53:16 10 Q. Is it your opinion that one cannot measure the
08:53:32 11 percent of any people with the disease for whom
08:53:36 12 smoking was a substantial factor in the development
08:53:40 13 of that disease?
08:53:42 14 A. Yes, I would agree that you cannot measure it.
08:53:46 15 You may make some estimates, but there is an
08:53:49 16 unsatisfactory known error around those estimates.
08:53:52 17 Q. And if you made such an estimate could you use
08:53:54 18 that to estimate health care costs involved in
08:54:03 19 treating that disease?
08:54:06 20 A. I think if you were trying to get at health care
08:54:10 21 costs, in a very general sense you may be able to
08:54:13 22 make some estimates, but the degree of precision to
08:54:17 23 which you could make those is an open question in my
08:54:20 24 mind, and the number of potential confounding factors
08:54:24 25 makes it, for all practical purposes, useless if

08:54:26 1 you're going to zero in on a real hard number.
08:54:35 2 Q. For the purpose of estimating to a reasonable
08:55:21 3 degree of certainty what the smoking attributable
08:55:27 4 health care costs are for any population is it your
08:55:31 5 opinion that the data that's currently available is
08:55:35 6 simply insufficient to do that?
08:55:38 7 MR. BORMAN: Object to the form. Go
08:55:41 8 ahead.
08:55:42 9 THE WITNESS: In my estimation I
08:55:46 10 think it's probably inadequate.
08:55:48 11 BY MR. LOVE:
08:55:48 12 Q. Probably or you believe it is inadequate?
08:55:52 13 A. I believe it is inadequate.
08:55:54 14 Q. And I take it you would not accept anyone's
08:55:57 15 estimate of that amount then?
08:55:59 16 A. I would not accept anyone's estimate; is that
08:56:04 17 your question?
08:56:05 18 Q. Right.
08:56:05 19 A. That's correct, not as a definitive estimate.
08:56:12 20 It's just an estimate.
08:56:13 21 Q. But you wouldn't even accept it as being an
08:56:17 22 estimate that could be made within a reasonable
08:56:21 23 degree of certainty, correct?
08:56:23 24 A. Not with a reasonable degree of certainty,
08:56:27 25 that's correct.

08:56:27 1 Q. And in your opinion it's not the kind of
08:56:30 2 estimate that you believe should be used as a basis
08:56:36 3 for making a damages' calculations in any kind of
08:56:39 4 litigation?
08:56:39 5 A. Absolutely not.
08:56:40 6 Q. When you say "absolutely not," you're agreeing
08:56:45 7 with my statement?
08:56:46 8 A. That's correct.
08:56:47 9 Q. Yesterday we discussed the NEISS System that you
08:57:30 10 conceived and helped develop, correct?

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08:57:33 11 A. Yes.
08:57:34 12 Q. Did the Consumer Product Safety Commission ever
08:57:37 13 use the NEISS data in any way other than identifying
08:57:41 14 products for further investigation of individual
08:57:44 15 incidents?
08:57:49 16 A. Yes, they did.
08:57:50 17 Q. What are the ways they used the NEISS data?
08:57:54 18 A. They used it to set priorities for budget
08:57:58 19 purposes so they would have an idea of what products
08:58:01 20 they could most effectively address their attention
08:58:03 21 to in any given year.
08:58:06 22 Q. By address their attention to, do you mean in
08:58:11 23 some way other than investigating individual
08:58:15 24 incidents involving a product?
08:58:17 25 A. Yes, indeed. It may be just in terms of setting

08:58:21 1 up a project to take a closer look at a product which
08:58:24 2 would include investigations among other things.
08:58:27 3 Q. So they would use the NEISS data to prioritize
08:58:35 4 projects in their budget; is that correct?
08:58:39 5 A. Yes. Not exclusively, but certainly to help
08:58:43 6 them to decide which products seem to be frequently
08:58:47 7 enough involved in product related injuries treated
08:58:50 8 in hospital emergency rooms that it would warrant
08:58:53 9 their attention.
08:58:54 10 Q. Are there any other ways in which the CPSC used
08:59:00 11 NEISS data?
08:59:01 12 A. Occasionally the data would be analyzed to
08:59:07 13 determine the relative distribution of products or
08:59:11 14 product related injuries.
08:59:13 15 Again, to help decide whether or not a product
08:59:16 16 was worthy of the Commission's attention.
08:59:18 17 Q. What type of statistical analysis was performed
08:59:26 18 on the NEISS data if any?
08:59:28 19 A. Usually nothing more than what I would call
08:59:31 20 tuberculosis accounting; that is counting up the
08:59:36 21 number of cases estimated to be associated with any
08:59:39 22 particular product and deciding which ones seem to be
08:59:42 23 associated with sufficiently more products, then the
08:59:46 24 Commission would want to take its limited resources
08:59:48 25 and take a closer look.

08:59:49 1 Q. Which ones would be associated with sufficiently
08:59:54 2 more injuries?
08:59:54 3 A. Yes, product related injuries.
08:59:57 4 Q. So really a simple count is the way it would be
09:00:01 5 analyzed?
09:00:03 6 A. That's correct.
09:00:03 7 Q. While you were with the CPSC did it ever
09:00:14 8 estimate the cost of injuries including the health
09:00:17 9 care costs of treating those injuries?
09:00:20 10 A. I don't recall them making a discreet analysis
09:00:25 11 of health care costs. There was an attempt by
09:00:28 12 another director to get at the total cost of
09:00:32 13 injuries, but those are by economists and they were
09:00:35 14 usually data from other sources.
09:00:37 15 Q. So another directorate within the CPSC was
09:00:44 16 trying to determine total costs involved with other
09:00:47 17 injuries?

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09:00:48 18 A. That's correct.
09:00:48 19 Q. In doing that did the CPSC estimate any costs
09:00:53 20 that would be avoided if the injury, in fact, killed
09:00:57 21 someone?
09:00:58 22 A. Not that I recall. They may have, but again,
09:01:11 23 that would have been made by a different director.
09:01:14 24 Q. In your opinion is that something that the CPSC
09:01:17 25 should have considered in measuring the total cost of

09:01:20 1 the product injuries?
09:01:29 2 A. No.
09:01:29 3 Q. Is the estimate of how many dollars would be
09:01:31 4 saved by preventing a death something they should
09:01:34 5 consider?
09:01:35 6 A. No.
09:01:36 7 Q. Is the estimate of how many dollars might not be
09:01:39 8 spent on health care considered; for instance, if a
09:01:41 9 product killed a person so that they didn't live
09:01:43 10 longer and get some other disease or condition that
09:01:47 11 required health care in the future because that
09:01:50 12 person had no future?
09:01:51 13 A. No, I don't think so.
09:01:51 14 Q. You don't think that would be appropriate?
09:01:54 15 A. I don't think that they did it, and I don't
09:01:56 16 think that it would be appropriate.
09:01:57 17 Q. Do other federal agencies use the NEISS data in
09:02:00 18 any way?
09:02:02 19 A. Several other federal agencies use NEISS data.
09:02:05 20 Q. How do they use it?
09:02:06 21 A. I don't know how they use it. They just
09:02:08 22 contract with us to get it because we have a
09:02:10 23 system -- not we because I'm not there anymore, but
09:02:13 24 the Consumer Product Safety Commission has a system
09:02:16 25 which is unique and gathers data much more cheaply

09:02:19 1 than it would gather elsewhere.
09:02:21 2 Q. Are you aware of any other federal agency that
09:02:25 3 performed any type of statistical analysis on NEISS
09:02:28 4 data?
09:02:28 5 A. I suspect other agencies perform statistical
09:02:36 6 analysis on NEISS data, but I don't know what that
09:02:39 7 analysis would be or what they've done with it other
09:02:42 8 than the Centers for Disease Control which didn't
09:02:45 9 have a regulatory authority, but collected data on
09:02:48 10 gunshot wounds through the NEISS so that they could
09:02:52 11 analyze it and produce articles on gunshot injuries,
09:02:55 12 but I was neither involved in that nor responsible
09:02:59 13 for doing any of the work to help produce the
09:03:01 14 articles.
09:03:02 15 Q. Other than the gunshot situation, I take it
09:03:07 16 you're not aware of any other situations in which
09:03:10 17 federal agencies -- specific situations in which
09:03:14 18 federal agencies performed a statistical analysis on
09:03:17 19 NEISS data, are you?
09:03:18 20 A. I'm not personally aware of any.
09:03:20 21 Q. Did you read any of the articles on the gunshot
09:03:23 22 analysis?
09:03:24 23 A. I may or may not have seen any. They've
09:03:27 24 produced several.

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09:03:28 25 Q. Do you have any memory today of what those

09:03:31 1 articles conclude?
09:03:33 2 A. No.
09:03:33 3 Q. Or what analysis they performed?
09:03:36 4 A. I don't think -- I don't think they had
09:03:39 5 conclusions. I think they were descriptive analyses
09:03:43 6 of the distribution of gunshot wounds, but I can't be
09:03:48 7 certain. I don't recall.
09:03:49 8 Q. Distribution by what?
09:03:51 9 A. By state, by race, by whatever factors they were
09:03:55 10 interested in.
09:03:55 11 Q. Now, yesterday I believe you told me that prior
09:04:18 12 to your work on these three tobacco cases you've
09:04:21 13 never made any use or worked with NMES; is that
09:04:25 14 correct?
09:04:25 15 A. That's correct.
09:04:26 16 Q. Prior to your work on these three tobacco cases
09:04:29 17 have you made any use of NHANES data?
09:04:34 18 A. No, I haven't.
09:04:35 19 Q. What about BRFSS data?
09:04:38 20 A. No, I haven't.
09:04:39 21 Q. Do you have any opinions regarding the validity
09:04:59 22 of the NHANES data that Drs. Zeger, Wyant and Miller
09:05:04 23 used in their work that's reflected in their expert
09:05:07 24 report?
09:05:07 25 A. No, I don't.

09:05:08 1 Q. Do you have any expert opinion with respect to
09:05:11 2 the validity of the BRFSS data in Minnesota as used
09:05:20 3 by Drs. Zeger, Wyant and Miller in their work?
09:05:22 4 A. As to whether or not it is validly used by the
09:05:26 5 State of Minnesota?
09:05:26 6 Q. Whether or not the data is valid.
09:05:30 7 A. May I ask what you mean by valid?
09:05:32 8 Q. Whether that data was collected in a proper way
09:05:43 9 and fairly reflects the situation in Minnesota on the
09:05:51 10 issues it addressed.
09:05:55 11 A. I don't have information on the number of
09:06:03 12 individuals within Minnesota who responded to the
09:06:10 13 questionnaires year by year, but I do know that the
09:06:13 14 BRFSS has an average of only about a thousand or
09:06:21 15 eleven or twelve hundred cases per year for each
09:06:26 16 state who participates as an average, and that being
09:06:32 17 the case, there would be a statistical error
09:06:36 18 associated with any estimates made from those that
09:06:40 19 would be proportionate to whatever size sample they
09:06:49 20 have.
09:06:49 21 The BRFSS did not necessarily produce a high
09:06:55 22 level of confident data -- or of data on which you
09:07:00 23 could have great confidence for all states.
09:07:03 24 Q. Do you have any specific information about the
09:07:05 25 BRFSS that was conducted in Minnesota as to whether

09:07:08 1 it was more comprehensive or involved more
09:07:14 2 respondents than the national average?
09:07:16 3 A. No, I don't.

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09:07:17 4 Q. And it's true, isn't it, that with any survey
09:07:21 5 data that there is a certain error level associated
09:07:31 6 with that data?
09:07:32 7 A. That's correct.
09:07:32 8 Q. Yesterday we briefly mentioned a document that
09:08:12 9 you authored called The Guidelines for Documentation
09:08:15 10 of Epidemiological Studies. Do you recall that?
09:08:20 11 A. Yes.
09:08:21 12 Q. I've got a copy of your article here.
09:09:19 13 MR. LOVE: Let's mark it.
09:09:20 14 (Plaintiffs' Deposition Exhibit 3307 - article -
09:09:23 15 marked for identification.)
09:09:23 16 BY MR. LOVE:
09:09:23 17 Q. Dr. Verhalen, I'll show you an article we have
09:09:28 18 marked as Exhibit 3307, an article from the American
09:09:35 19 Journal of Epidemiology.
09:09:37 20 It's got the contents from that particular
09:09:39 21 journal issue, and then it's followed by the article
09:09:41 22 entitled Guidelines for Documentation of
09:09:43 23 Epidemiologic Studies, and I ask if that's the
09:09:49 24 article that you authored.
09:09:51 25 A. Yes, I was a co-author in that.

09:10:05 1 Q. Are the other co-authors listed in the footnote
09:10:09 2 of the first page of the article?
09:10:11 3 A. They are.
09:10:11 4 Q. Were these guidelines designed to apply to
09:10:19 5 surveys such as NMES?
09:10:24 6 A. They would not have been directly applied for
09:10:31 7 that, however, I think the consensus of the group
09:10:34 8 would have been that they probably should have been
09:10:37 9 applied.
09:10:37 10 Q. I note that on page 612 of the article -
09:10:49 11 numbered at the top left 612 - there is a section
09:10:54 12 with Roman numeral IV called Data Collection
09:10:58 13 Procedures.
09:10:59 14 Would that be a portion of the guidelines that
09:11:02 15 would apply to a study such as NMES?
09:11:05 16 A. Yes.
09:11:05 17 Q. Did NMES to the 1987 study fail to follow these
09:11:21 18 guidelines in any way?
09:11:23 19 A. I really didn't look at it from that
09:11:29 20 perspective. I don't know.
09:11:30 21 Q. Is that something that you can address today
09:11:34 22 during your deposition or do you need a significant
09:11:38 23 amount of time to review NMES to answer that
09:11:41 24 question?
09:11:41 25 A. I would prefer to review NMES again and review

09:11:45 1 the guidelines again.
09:11:46 2 Q. Is there anything you can tell me at all today
09:11:50 3 about the extent to which NMES did or did not follow
09:11:53 4 these guidelines?
09:11:55 5 A. Among the documents which I saw on NMES, I did
09:12:00 6 not find sufficient documentation in all aspects that
09:12:09 7 would give me great confidence in it.
09:12:12 8 But since NMES was not being used for regulatory
09:12:16 9 purposes, I would not have had that in mind when I
09:12:18 10 was looking at it.

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09:12:20 11 Q. Do you believe you have seen all the
09:12:22 12 documentation that's associated with NMES II?
09:12:25 13 A. Not necessarily.
09:12:27 14 Q. So the documentation may exist, you wouldn't
09:12:29 15 necessarily know?
09:12:30 16 A. That's correct.
09:12:31 17 Q. Can you give me an example of an area in which
09:12:34 18 you did not see sufficient documentation?
09:12:36 19 A. I can't give you an example of an area in which
09:12:39 20 I did not see documentation.
09:12:41 21 Q. Sufficient documentation to comply or follow the
09:12:45 22 guidelines?
09:12:46 23 A. Not off the top of my head, no.
09:12:48 24 Q. And I'll ask the same questions with respect to
09:13:03 25 NHANES. To what extent did NHANES fail to follow

09:13:08 1 these guidelines?
09:13:10 2 A. I don't know. I did not look at NHANES from
09:13:13 3 that perspective.
09:13:14 4 Q. To what extent did BRFSS in Minnesota fail to
09:13:21 5 follow these guidelines?
09:13:23 6 A. Same answer.
09:13:27 7 Q. Just so the record is clear, why don't you tell
09:13:43 8 us what NHANES is.
09:13:46 9 A. NHANES is a nutrition survey conducted by the
09:13:52 10 Health Interview -- by the National Center for Health
09:13:55 11 Statistics.
09:14:37 12 Q. I'm referring to the National Health and
09:14:45 13 Nutrition Survey --
09:14:48 14 A. Yes.
09:14:49 15 Q. -- by NHANES?
09:15:09 16 A. Yes.
09:15:09 17 Q. Dr. Verhalen, were these guidelines designed to
09:15:13 18 apply to a report such as Professor of Doctorate
09:15:21 19 Samet's expert report, in this case Exhibit 3501,
09:15:26 20 that you have reviewed?
09:15:28 21 A. That's not why the guidelines were developed.
09:15:32 22 Q. Do you think it's appropriate to apply the
09:15:35 23 guidelines to a report such as Exhibit 3501?
09:15:40 24 A. It might be.
09:15:41 25 Q. Then again it might not be?

09:15:43 1 A. Correct. It depends on how one was to use it.
09:15:47 2 Q. Use what?
09:15:48 3 A. The report.
09:15:49 4 Q. If one wants to use the report as an expert
09:15:51 5 report in litigation such as a lawsuit that we're
09:15:55 6 involved in here between Minnesota and Blue Cross
09:15:58 7 Blue Shield of Minnesota and the various tobacco and
09:16:04 8 industry groups, is it your opinion that the
09:16:05 9 guidelines would be appropriate to apply to the
09:16:09 10 reported use for that purpose?
09:16:10 11 A. Unofficially they might be, but that's not why
09:16:14 12 they were developed.
09:16:14 13 Q. As you reviewed Dr. Samet's report, Exhibit
09:16:20 14 3501, did you find any instance in which he failed to
09:16:27 15 follow these guidelines?
09:16:28 16 A. Not off the top of my head, no.
09:16:31 17 Q. Do you have a general recollection that he

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09:16:33 18 failed to follow the guidelines in any way?
09:16:36 19 A. I suppose if I wanted to be real persnickety I
09:16:42 20 could say that when documents are simply referenced
09:16:46 21 by number and not by title or included, that might be
09:16:50 22 considered less than adequate documentation, but I
09:16:55 23 really didn't look at it from that perspective.
09:16:58 24 The guidelines were not -- the criteria by which
09:17:04 25 I decided on these, the guidelines are merely an

09:17:07 1 example of what was necessary to be felt for
09:17:10 2 regulatory purposes.
09:17:19 3 Q. You told me that if you wanted to be real
09:17:22 4 persnickety you could say that Dr. Samet's report
09:17:27 5 failed to follow the guidelines by referring to
09:17:30 6 documents by Bates numbers rather than by title,
09:17:34 7 correct?
09:17:34 8 A. That's correct, if those are not articles that
09:17:37 9 someone who was interested in them could get to for
09:17:42 10 purposes of assessing the study.
09:17:44 11 Q. If instead of wanting to be real persnickety,
09:17:49 12 you just wanted to be fair can you tell me of any way
09:17:53 13 in which you noticed that Dr. Samet's report, Exhibit
09:17:57 14 3501, didn't follow the guidelines?
09:18:02 15 A. As I said, not off the top of my head, no.
09:18:05 16 Q. Would your answers be the same with respect to
09:18:13 17 the report prepared by Drs. Zeger, Wyant and Miller,
09:18:26 18 Exhibit 2321?
09:18:32 19 A. Would my answer be the same?
09:18:34 20 Q. Yes.
09:18:35 21 A. Yes. The guidelines were not the measure by
09:18:39 22 which I was making this. Reference to the guidelines
09:18:43 23 was simply to refer to the fact that any research
09:18:48 24 should be fully documented as much as possible so
09:18:52 25 that anyone reviewing could explore any possible

09:18:56 1 avenue to ensure that the study is justified in its
09:19:00 2 conclusions.
09:19:01 3 Q. Do you know if Drs. Zeger, Wyant and Miller in
09:19:43 4 their work in preparing they're work, Exhibit 2321,
09:19:54 5 adjusted for any significant differences in the NMES
09:19:58 6 data between the national data and the data gathered
09:20:01 7 in the midwest region?
09:20:04 8 A. Would you repeat the question?
09:20:09 9 MR. LOVE: Would you read it?
09:20:26 10 (Record read.)
09:20:29 11 THE WITNESS: I can't give you
09:20:30 12 specifics, but I believe they did in some cases, yes.
09:20:35 13 BY MR. LOVE:
09:20:35 14 Q. Did they do so in an appropriate way?
09:20:39 15 A. I can't answer that just off the top of my head.
09:20:44 16 I would have to review the document.
09:20:46 17 Q. Do you recall seeing in any way in which they
09:20:49 18 made an adjustment that was not appropriate?
09:20:51 19 A. Not offhand.
09:20:52 20 Q. If you'll turn to your expert report, Exhibit
09:21:04 21 3301, and I'm looking at page 7.
09:21:14 22 A. 7?
09:21:16 23 Q. Yes. The summary of opinions. Do you have that
09:21:28 24 there, sir?

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09:21:29 25 A. Yes.

09:21:29 1 Q. Looking at the fourth bullet point, would you
09:21:34 2 read that sentence to yourself?
09:21:36 3 A. Okay.
09:21:44 4 MR. BORMAN: Are you talking about
09:21:46 5 page 7, summary of opinions?
09:21:50 6 MR. LOVE: Yes.
09:21:50 7 BY MR. LOVE:
09:21:50 8 Q. My first question, Dr. Verhalen, is really that
09:21:58 9 it seems to me there might be some typographical
09:22:00 10 error in that sentence in that it refers to survey
09:22:04 11 data employed in the model used by Minnesota to
09:22:07 12 construct its model.
09:22:08 13 That use of the word model twice, is that
09:22:11 14 intentional?
09:22:12 15 A. No, and it's not typographical. It's probably
09:22:16 16 just a semantic problem when I was --
09:22:19 17 Q. Can you tell us what you meant to say?
09:22:22 18 A. In the data used by Minnesota to conduct its
09:22:25 19 model would probably be a better way to say that.
09:22:31 20 Q. So if we took out the words employed and the
09:22:35 21 model and --
09:22:36 22 A. And make it employed by the data used by
09:22:40 23 Minnesota to construct its model.
09:22:42 24 Q. I'm just trying to read what I thought you said,
09:22:45 25 and if you can tell me if I'm mistaken, if we took

09:22:50 1 out the words employed and model it would read there
09:22:53 2 are several logical flaws and scientific flaws from
09:22:57 3 an epidemiological viewpoint in the survey data used
09:23:02 4 by Minnesota to conduct its model; is that fairly
09:23:09 5 stated?
09:23:09 6 A. Yes. I guess a better way to have said that
09:23:16 7 would be employed in the surveys or studies used by
09:23:20 8 Minnesota to construct its model, because otherwise
09:23:23 9 we're using the data more than once.
09:23:33 10 There are several studies in the survey data
09:23:42 11 employed in the studies used by Minnesota to
09:23:44 12 construct its model.
09:23:54 13 Q. Thank you. Did you find such flaws in the NMES
09:24:17 14 data?
09:24:17 15 A. Yes.
09:24:55 16 Q. Under the flaws that you found discussed on
09:24:59 17 pages 15 through 17 of your report it's -- page 15 is
09:25:13 18 the one that's called NMES data?
09:25:33 19 A. I'm sorry. Would you repeat your question?
09:25:36 20 Q. Sure. Are the flaws that you found in the NMES
09:25:40 21 data discussed in pages 15 through 17 of your report?
09:25:44 22 A. Yes.
09:25:45 23 Q. Are there any flaws in the NMES data that you
09:25:49 24 found that are not discussed in pages 15 through 17
09:25:53 25 of your report?

09:25:53 1 A. There may be. I didn't discuss everything that
09:25:56 2 I found on it. Given the constraints on time, I was
09:26:01 3 sort of hitting the highlights.

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09:26:03 4 Q. Can you tell me today about any flaws that you
09:26:06 5 found in the NMES data that aren't discussed in your
09:26:10 6 report?
09:26:10 7 A. Not offhand.
09:26:12 8 Q. Did you find flaws in the NHANES data?
09:26:16 9 A. No.
09:26:16 10 Q. Did you find flaws in the BRFSS data?
09:26:22 11 A. Yes, I did.
09:26:23 12 Q. Where are they discussed in your report?
09:26:26 13 A. They're not specifically discussed in here I
09:26:30 14 don't think. I did not specifically discuss the
09:27:03 15 report.
09:27:03 16 Q. Did you discuss the Minnesota BRFSS data in
09:27:08 17 performing your work in this case?
09:27:09 18 A. I just recently reviewed some that was given to
09:27:13 19 me yesterday.
09:27:13 20 Q. Was that the first time you reviewed any
09:27:17 21 Minnesota BRFSS data?
09:27:19 22 A. Yes, but this is even not specific BRFSS data.
09:27:24 23 But I did look at Minnesota in comparing to the other
09:27:28 24 states for prior years.
09:27:31 25 Q. Without reviewing Minnesota BRFSS data how did

09:27:37 1 you find flaws in it?
09:27:39 2 A. The Minnesota BRFSS data as I said earlier come
09:27:44 3 from one of the smaller states that were participants
09:27:50 4 in the BRFSS, and as a consequence should have had a
09:27:56 5 far larger sample of people interviewed in order to
09:28:00 6 get much confidence in their data.
09:28:03 7 Q. Far larger a sample than what?
09:28:07 8 A. Than was evident in what they were giving. Most
09:28:12 9 of the smaller states in various studies that have
09:28:15 10 been made of BRFSS who had inadequate samples to
09:28:21 11 provide high confidence in the data from the survey.
09:28:26 12 Q. Other than the size of the Minnesota BRFSS
09:28:31 13 sample did you find any other logical or scientific
09:28:38 14 flaws in that data?
09:28:40 15 A. Not offhand. There may have been, but I don't
09:28:45 16 recall any right offhand.
09:28:46 17 Q. Let's turn to page 15 of your report where you
09:29:46 18 discussed the NMES data in more detail. Now,
09:30:00 19 yesterday we talked about the memory decay problem.
09:30:05 20 Is there anything more about the memory decay
09:30:08 21 problem that you've found that we didn't talk about
09:30:12 22 yesterday?
09:30:13 23 A. I don't think so. We probably pretty well
09:30:16 24 covered it yesterday.
09:30:17 25 Q. And you ultimately concluded that memory decay

09:30:25 1 would not be a significant problem for answering the
09:30:27 2 question for a person who had smoked so long as the
09:30:31 3 person had smoked for at least a year, correct?
09:30:34 4 A. That's correct.
09:30:35 5 Q. And you also conclude that memory decay would
09:30:39 6 not be a significant problem for people answering the
09:30:43 7 question whether they were currently treating for one
09:30:45 8 of the major attributable diseases that are listed in
09:30:48 9 the reports of Drs. Samet, Zeger, Wyant and Miller;
09:30:54 10 is that correct?

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09:30:54 11 A. I'm not so sure I would agree with that because
09:30:57 12 I think our conversation revolved around the fact
09:31:00 13 that there was inconsistency in what was reported by
09:31:02 14 the individuals and what was reported by the
09:31:04 15 physicians of people who were under treatment.
09:31:10 16 Q. Dr. Verhalen, I'll show you attachment B to
09:31:37 17 Exhibit 2321. It's the list of major smoking
09:31:40 18 attributable diseases from the Zeger, Wyant, Miller
09:31:44 19 report.
09:31:50 20 My question is, do you believe that memory decay
09:31:56 21 would be a problem in a person answering a question
09:32:01 22 as to whether they were currently treated for any of
09:32:05 23 those diseases?
09:32:10 24 A. I think we agreed yesterday that I agreed with
09:32:35 25 you, that it might not be, but again, I would have

09:32:38 1 said might not be because even a condition as
09:32:41 2 significant as atherosclerosis did have a very low
09:32:51 3 correlation.
09:32:59 4 Q. Is it your understanding that NMES asked the --
09:33:06 5 its interviewees, the patients, the same questions
09:33:14 6 about their disease that they asked the physicians or
09:33:20 7 looked for the medical records?
09:33:21 8 A. For all practical purposes I believe that's true.
09:33:25 9 Q. Isn't it true that the question asked of a
09:33:36 10 medical care provider was specifically asked about a
09:33:38 11 particular visit that the patient had to that medical
09:33:41 12 care provider and what they were treated for on that
09:33:45 13 visit?
09:33:45 14 A. I don't recall.
09:33:46 15 Q. If that were the case could that explain
09:33:54 16 somewhere all of the lack of correlation between the
09:33:59 17 self reporting of disease and the medical provider
09:34:05 18 reporting of disease in NMES?
09:34:08 19 MR. BORMAN: Object to the form.
09:34:11 20 THE WITNESS: I don't think so.
09:34:12 21 BY MR. LOVE:
09:34:12 22 Q. Why not?
09:34:14 23 A. Simply because even with the case of heart
09:34:16 24 attacks that you would expect people to remember
09:34:20 25 fairly well, you would expect a higher degree of

09:34:23 1 correlation between what is reported between the
09:34:25 2 medical care provider and the victim, and even there
09:34:28 3 the correlation was only at about thirty-nine
09:34:31 4 percent.
09:34:37 5 Q. Other than the lack of correlation that you
09:34:44 6 have discussed between the self reporting of disease
09:34:47 7 and the medical provider report of disease do you
09:34:57 8 have any other basis for saying that self reporting
09:35:00 9 of disease is a significant flaw in NMES?
09:35:06 10 A. No. I think there the situation speaks for
09:35:14 11 itself; the lack of the correlation on major
09:35:20 12 significant medical problems is in and of itself
09:35:23 13 sufficient.
09:35:30 14 MR. LOVE: Would you mark this?
09:35:30 15 (Plaintiffs' Deposition Exhibit No. 3308 - article -
09:36:28 16 marked for identification.)
09:36:30 17 BY MR. LOVE:

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09:36:30 18 Q. Dr. Verhalen, I'll show you what we have marked
09:36:32 19 as Exhibit 3308, an article from the American Journal
09:36:35 20 of Public Health, the first sort of cover page of
09:36:40 21 that journal issue, and it has behind it the article
09:36:44 22 entitled Health Insurance and Subject Health Status
09:36:47 23 Data from the 1987 National Medical Expenditure
09:36:53 24 Survey. I'll ask if you've seen that before.
09:37:01 25 A. I think I have. I'm not sure.

09:37:12 1 Q. If it assists you, I'll point out that it was
09:37:18 2 one of the articles listed in your -- I believe it's
09:37:22 3 called the Minnesota bibliography under tab 6 of your
09:37:30 4 report.
09:37:38 5 Would you turn to 1298 of the article? The page
09:37:44 6 number is on the lower bottom end of the pages.
09:37:51 7 You will see at the bottom of the first column
09:37:54 8 the article talks about the NMES self administered
09:37:58 9 questionnaire to assess subject health status. Do
09:38:03 10 you see that?
09:38:05 11 A. Yes.
09:38:05 12 Q. The second sentence of that paragraph states
09:38:08 13 that the methodology of self assessed health status
09:38:12 14 is well grounded. Do you agree with that?
09:38:19 15 A. I think that it's a much used technique. It
09:38:23 16 is -- whatever is meant by well grounded there, I'm
09:38:28 17 not sure.
09:38:28 18 Q. Would you say that the use of self -- the
09:38:50 19 methodology of self assessed health status is a
09:38:57 20 standard used in epidemiological studies?
09:39:02 21 A. It's a frequently used method for -- based
09:39:07 22 largely on the cost of administering surveys.
09:39:10 23 Q. Is it a standard method?
09:39:13 24 A. I don't know that it's a standard method. It's
09:39:15 25 a frequently used method, so is personal interviews.

09:39:20 1 Q. Is it a non-standard method?
09:39:24 2 A. It may be standard for some people, it may not
09:39:29 3 be standard for others.
09:39:31 4 What I'm saying is that there are a number of
09:39:34 5 ways to conduct interviews. The cheaper way than
09:39:37 6 having personal interviews by interviewers, by
09:39:42 7 professional interviewers, is to have self
09:39:46 8 administered questionnaires.
09:39:47 9 So in that sense one might consider it standard,
09:39:51 10 but if one sets a higher standard on being able to
09:39:54 11 ensure that an individual understands a question when
09:39:58 12 one answers the question, the better course is to
09:40:02 13 have a professional interviewer.
09:40:10 14 Q. If health status questions are asked by a
09:40:16 15 professional interviewer either in person or by
09:40:19 16 telephone is that a standard method of gathering data
09:40:23 17 for epidemiological studies?
09:40:27 18 A. If this is the tactic you're going to take then
09:40:31 19 I would say yes to all of the above; they're all
09:40:34 20 standard methods.
09:40:36 21 Q. Is that a well grounded method for gathering
09:40:39 22 data in epidemiological studies, having an
09:40:42 23 interviewer ask about the interviewee's health
09:40:46 24 status?

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09:40:47 25 A. Can you define for me what you mean by well

09:40:50 1 grounded?
09:40:51 2 Q. Something that's generally accepted in the field
09:40:55 3 of epidemiology.
09:40:57 4 A. By some people, yes.
09:41:00 5 Q. When I say "generally accepted," I mean by
09:41:04 6 the -- in the field; not by some people in the field,
09:41:08 7 but by the field in general.
09:41:11 8 A. One might say generally accepted without
09:41:15 9 implying that absolutely everyone in the field would
09:41:18 10 accept that. If that's the definition, yes, I'll
09:41:25 11 accept that.
09:41:29 12 Q. The next sentence that says besides being a
09:41:35 13 sensitive measure of the severity of current
09:41:38 14 morbidity, subjective health status is a powerful
09:41:39 15 predictor of future morbidity and mortality. Do you
09:41:44 16 agree with that statement?
09:41:45 17 A. Not necessarily.
09:41:47 18 Q. Why not?
09:41:48 19 A. Because again, I haven't a great deal of
09:41:51 20 confidence in self administered questionnaires.
09:41:54 21 Q. Do you know whether generally in the field of
09:42:02 22 epidemiology self reported health status is regarded
09:42:11 23 as a sensitive measure of the severity of current
09:42:14 24 morbidity?
09:42:15 25 A. I can't speak for the field of epidemiology. I

09:42:18 1 can speak for myself.
09:42:19 2 Q. So you don't know whether that's something that
09:42:28 3 generally is believed in the field of the
09:42:30 4 epidemiology, work field?
09:42:31 5 A. I know it is widely used.
09:42:34 6 Q. But you don't know if it's generally accepted?
09:42:37 7 A. I don't know. I can say that many people accept
09:42:41 8 it, probably a substantial number don't.
09:42:44 9 I don't necessarily accept it, depending on the
09:42:47 10 questions being asked and how likely they are to be
09:42:50 11 accurately interpreted and responded to.
09:42:51 12 Q. Do you know whether the majority of
09:42:54 13 epidemiologists accept it?
09:42:56 14 A. I've never polled the epidemiologists.
09:43:01 15 Q. But based on your many years in the field?
09:43:04 16 A. I couldn't say whether the majority of
09:43:07 17 epidemiologists accept it.
09:43:09 18 Q. I take it your answers would be the same with
09:43:12 19 respect to self assessed health status is a powerful
09:43:19 20 indicator of future morbidity and mortality.
09:43:26 21 A. That's correct.
09:43:28 22 Q. Have you had discussions with other
09:43:39 23 epidemiologists about the use of self reported health
09:43:43 24 status in epidemiology?
09:43:44 25 A. From time to time in years past, yes.

09:43:46 1 Q. What was the substance of those conversations?
09:43:49 2 A. What was the substance of the conversations?
09:43:53 3 Q. Right.

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09:43:53 4 A. Where we're not self reported questionnaires, we
09:43:57 5 would listen to the kind of response we were looking
09:43:59 6 for.
09:44:00 7 Q. In a particular study or survey?
09:44:02 8 A. Yeah, most often. Since that was the majority
09:44:06 9 of my career, it dealt with the area of trauma
09:44:10 10 epidemiology.
09:44:15 11 Q. What type of questions were you considering
09:44:17 12 asking?
09:44:18 13 A. We were asking a number of questions, for
09:44:21 14 example, about how incidents occurred, how accidents
09:44:25 15 occurred, how often somebody used products; all of
09:44:29 16 the questions that were going in to assessing whether
09:44:34 17 products were in some way worthy of the Commission
09:44:40 18 supplies and take a closer look.
09:44:42 19 Q. Did you choose to use any self reported
09:44:45 20 information in that regard?
09:44:46 21 A. We ultimately decided we had to because we
09:44:50 22 didn't have the resources to do it the way we would
09:44:55 23 have preferred.
09:44:56 24 Q. At the top of page 16 of your report continuing
09:45:18 25 with your discussion of NMES data you talk about

09:45:22 1 something called digital preference; is that correct?
09:45:25 2 A. At the top of the page?
09:45:28 3 Q. Top of page 16.
09:45:30 4 A. Yes.
09:45:31 5 Q. How did digital preference affect, if it did,
09:45:44 6 the way in which Drs. Zeger, Wyant and Miller used
09:45:49 7 NMES data?
09:45:51 8 A. I'm not saying specifically how it did because
09:45:54 9 I'm not sure that it did. I'm just saying that
09:45:57 10 whenever you're asking people for specific numbers,
09:46:01 11 whether you're talking about age, whether you're
09:46:03 12 talking about number of cigarettes smoked, whether
09:46:06 13 you're talking about number of visits to a physician
09:46:09 14 or anything else, that quantifying digital preference
09:46:14 15 may be a problem.
09:46:15 16 Q. But you're not saying that it was actually a
09:46:19 17 problem in Drs. Zeger, Wyant and Miller's use of NMES
09:46:24 18 data?
09:46:24 19 A. Not necessarily. It could have been.
09:46:28 20 Q. Other than age can you think of any data that
09:46:35 21 Drs. Zeger, Wyant and Miller used that would even be
09:46:40 22 subject to digital preference because of this digital
09:46:43 23 information?
09:46:43 24 A. I would have to review the document again.
09:46:46 25 There are a number of areas where they're asking for

09:46:48 1 quantifications.
09:46:51 2 Q. Can you think of any today other than age?
09:46:54 3 A. Not just offhand.
09:46:55 4 Q. At the end of that paragraph that started or
09:47:13 5 continued at the top of page 16 you stated that any
09:47:16 6 estimates relying on this type of data cannot be
09:47:21 7 considered reliable. Do you see that?
09:47:22 8 A. Yes.
09:47:22 9 Q. Is it your opinion that no reliable estimates
09:47:27 10 can be made on self administered health status

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09:47:31 11 questionnaires?
09:47:32 12 A. It's my opinion that reliability would vary as a
09:47:36 13 function of people's ability to understand and
09:47:39 14 properly respond to the questions.
09:47:40 15 Q. Well, you state, don't you, that any estimates
09:47:47 16 relying on this type of data cannot be considered
09:47:49 17 reliable?
09:47:50 18 A. That's correct.
09:47:51 19 Q. Does that mean that no reliable estimates can be
09:47:56 20 made relying on self administered questionnaire data?
09:47:59 21 A. I think that's correct.
09:48:00 22 Q. And is that apart from your causation concerns?
09:48:22 23 A. Yes. The degree to which you would want to set
09:48:32 24 your reliance would be a function of the use to which
09:48:35 25 you were to put the data.

09:48:49 1 Q. Does that mean that you can estimate some things
09:48:52 2 using self administered health questionnaires
09:48:56 3 reliably, but not other things?
09:48:59 4 A. It means that you can estimate about anything
09:49:02 5 using self administered questionnaires, but that the
09:49:09 6 level of reliableness would be a function of the use
09:49:13 7 to which you were going to put the data.
09:49:15 8 So in that sense it may be less reliable in some
09:49:18 9 circumstances than in others.
09:49:19 10 Q. To what extent did NMES rely on self
09:49:24 11 administered health status questionnaires?
09:49:27 12 A. It relied on it very heavily in the development
09:49:29 13 of the smoking attributable fractions of diseases
09:49:35 14 used to compute the costs.
09:49:38 15 Q. My question was, to what extent did NMES use
09:49:45 16 self administered health status questionnaires. I
09:49:54 17 don't believe NMES calculated smoking related --
09:49:58 18 A. No, it didn't.
09:50:00 19 Q. To what extent did NMES use health administered
09:50:05 20 health status questionnaires? I'm talking about NMES
09:50:11 21 II in all these questions, the 1987 version.
09:50:15 22 A. I would have to look at it again. I can't give
09:50:18 23 you the specific answers.
09:50:19 24 Q. You understand that NMES did use telephone
09:50:23 25 interviews as well?

09:50:24 1 A. That's correct.
09:50:25 2 Q. To that you're just telling me you're not sure
09:50:28 3 today to what extent they used health status
09:50:32 4 questionnaires versus telephone interview
09:50:35 5 questionnaires?
09:50:35 6 A. The one that comes first to my mind is the self
09:50:40 7 administered health questions on smoking behavior.
09:50:48 8 Q. In the first full paragraph on page 16 that
09:51:21 9 takes us to about the second half of the page you
09:51:24 10 discuss what you call poor correlation between the
09:51:34 11 subject self reported disease information and the
09:51:38 12 health care provider reported disease information,
09:51:42 13 correct?
09:51:43 14 A. Yes.
09:51:43 15 Q. And at the bottom of the page are you saying
09:51:51 16 that one can't rely on the medical provider
09:51:57 17 information about the subject's disease status

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09:52:01 18 either?
09:52:05 19 A. I'm saying that even the medical provider
09:52:07 20 information is not necessarily always a -- is not
09:52:13 21 always correct or factual.
09:52:15 22 Q. In your opinion is the medical provider
09:52:17 23 information reliable?
09:52:19 24 A. Reliability is a function, again as I said
09:52:25 25 earlier, of how you intend to use it, the level of

09:52:29 1 reliability that you acquire, and if you're using it
09:52:32 2 in a general sense to give general program guidance
09:52:36 3 it's probably adequate.
09:52:37 4 If you're using it very specifically for
09:52:39 5 purposes of assigning costs with an eye towards some
09:52:48 6 very specific measure, it may not be reliable enough.
09:52:50 7 Q. When you say "it may not be reliable enough," is
09:52:54 8 it your opinion that it may be or it may not be, you
09:52:57 9 just can't tell me which one it is?
09:52:59 10 A. In this particular case for this use I don't
09:53:02 11 think it's reliable enough.
09:53:03 12 Q. Why not?
09:53:04 13 A. Because it is not necessarily correct.
09:53:11 14 Q. What degree of reliability do you demand of data
09:53:16 15 for the purposes Drs. Zeger, Wyant and Miller are
09:53:20 16 using?
09:53:21 17 A. I would require a very high degree of
09:53:23 18 reliability, but I can't give you a figure. I would
09:53:27 19 want to sit down to give that consideration.
09:53:32 20 Q. Yesterday we talked briefly about decisions made
09:53:36 21 by engineers, for instance, and their use of
09:53:42 22 statistical information in making those decisions,
09:53:45 23 correct?
09:53:46 24 A. Yes.
09:53:46 25 Q. Isn't it also true that the medical profession

09:53:55 1 uses statistical information to make decisions about
09:53:59 2 what type of care or procedure to use in treating a
09:54:06 3 patient?
09:54:08 4 A. An individual patient?
09:54:10 5 Q. Yes.
09:54:11 6 A. It may be used by some practictioners with an
09:54:15 7 eye toward being able to give the victim a
09:54:20 8 probability of outcome.
09:54:23 9 Q. Let me just take one hypothetical example and
09:54:27 10 see if we can talk it through.
09:54:30 11 If there may be some condition for which surgery
09:54:35 12 is available as a treatment and, in fact, there might
09:54:37 13 be two different surgical procedures that could be
09:54:41 14 used to address this condition, and statistics may
09:54:45 15 have been gathered on the use of those two different
09:54:47 16 procedures over time, and analysis performed on the
09:54:52 17 statistics shows that procedure A has a higher
09:54:58 18 probability of a favorable outcome than procedure B
09:55:01 19 for people in certain age groups and gender groups
09:55:05 20 and so on, okay?
09:55:08 21 A. Yes, I understand.
09:55:11 22 Q. Wouldn't it be fair for a surgeon to use that
09:55:17 23 information in deciding which procedure, A or B, to
09:55:22 24 use on a given patient?

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09:55:25 25 MR. BORMAN: I'll object to the form.

09:55:28 1 THE WITNESS: I don't know if it would
09:55:29 2 be fair. Undoubtedly he would do it because he has
09:55:32 3 what is in his mind the potential litigation that he
09:55:37 4 may face if he's wrong, as well as he may be very
09:55:42 5 concerned about the individual outcome for the
09:55:45 6 patient.
09:55:48 7 On the other hand, as I've said, that's a
09:55:51 8 decision that if there is a substantial difference
09:55:53 9 between two kinds of things, the patient in my view
09:55:57 10 should probably be notified.
09:55:59 11 Secondly, most statistics of which I'm
09:56:01 12 aware, and I'm not aware of all of them, of this type
09:56:06 13 would usually be used upon a reasonably large census,
09:56:13 14 collection of data, of all similar cases that have
09:56:16 15 been documented with literature rather than a survey
09:56:19 16 of some population just to see what the estimates
09:56:24 17 might be.
09:57:07 18 BY MR. LOVE:
09:57:07 19 Q. Return back to page 7 of your report, the
09:57:15 20 summary of opinions. Before we do that, Dr.
09:57:28 21 Verhalen, we have just been discussing the items that
09:57:36 22 you addressed on pages 15 and 16 of your report,
09:57:40 23 correct?
09:57:40 24 A. Yes.
09:57:40 25 Q. Are there any other logical or scientific flaws

09:57:46 1 that you found in the NMES data that we haven't
09:57:50 2 discussed yet?
09:57:51 3 A. There very well may be. I would have to go
09:57:56 4 through them again to decide. I said what I was
09:57:59 5 covering here was, as I said, exemplary information.
09:58:05 6 Q. Can you tell me today whether there are any other
09:58:08 7 logical or scientific flaws in the NMES data besides
09:58:12 8 what we have discussed today?
09:58:15 9 A. I'm confident there are.
09:58:18 10 Q. Can you tell me what any of them are?
09:58:21 11 A. Not just off the top of my head.
09:58:22 12 Q. And even though you prepared for today's
09:58:29 13 deposition as you told me yesterday you're unable to
09:58:32 14 give me any other logical or scientific flaws in the
09:58:36 15 NMES data that we haven't discussed; isn't that
09:58:40 16 correct?
09:58:41 17 A. Off the top of my head, that's correct.
09:58:46 18 Q. Back on page 7 the fifth bullet point states
09:58:51 19 that there are times when appropriate conditions
09:58:55 20 exist when national data can be used at the state
09:59:01 21 level. What times are those?
09:59:08 22 A. As I said on page 17 of the report under the
09:59:12 23 portion entitled synthetic estimation, I say that
09:59:17 24 they can be used when and only when the national
09:59:23 25 sample takes into account the statistical

09:59:24 1 representativeness of each stage sub-sample
09:59:28 2 population at the level to which it's going to be
09:59:31 3 extrapolated; that is to say that when the national

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09:59:35 4 sample is drawn, it must take into account the
09:59:39 5 statistical representation of each state in that
09:59:42 6 sample for which they're going to be able to make
09:59:45 7 estimates to ensure that each state is appropriately
09:59:49 8 represented.
09:59:50 9 Q. Does that mean that the national sample has to
09:59:54 10 contain enough information from a given state to
09:59:56 11 allow for direct estimation?
10:00:01 12 A. I think it does, yes, when it involves an issue
10:00:09 13 of this nature.
10:00:09 14 Q. Are there any other times when it's appropriate
10:00:12 15 to use national data at the state level?
10:00:16 16 A. Certainly when it's less important, but also the
10:00:21 17 degree of precision with which you're going to try to
10:00:25 18 make those estimates may be a little less rigorous.
10:00:37 19 Q. Because the NMES survey was not conducted in a
10:00:41 20 way to identify a sufficient number of respondents
10:00:48 21 from Minnesota to allow for direct estimation; is it
10:00:52 22 your opinion that that's why NMES cannot be used to
10:00:56 23 make a state estimate?
10:00:58 24 A. Because NMES was designed for general policy
10:01:02 25 guidance with an eye toward such -- targeted to a

10:01:08 1 specific use to which it's being made in the
10:01:11 2 Minnesota litigation; I think it is inadequate in its
10:01:14 3 representation, that's correct.
10:01:16 4 Q. Dr. Verhalen, on pages 11 and 12 of your report
10:01:51 5 you have a further discussion of NMES; is that
10:01:54 6 correct?
10:01:55 7 A. Yes.
10:02:34 8 MR. LOVE: Why don't we take a five
10:02:37 9 minute break and I'll get my documents together.
10:02:43 10 (Recess taken.)
10:10:56 11 MR. LOVE: Keith, maybe you want a
10:10:58 12 housekeeping matter on the record. I have not asked
10:11:02 13 Dr. Verhalen questions about any conversations he's
10:11:06 14 had with you or any of the attorneys in this case or
10:11:09 15 the Mississippi case or Texas case because I assume
10:11:13 16 you would object to attorney work product.
10:11:14 17 I understand plaintiffs have objected the
10:11:17 18 same objections with their experts, but I do want to
10:11:21 19 state, I don't know whether that's the subject of
10:11:23 20 another discussion between the two parties as to
10:11:26 21 whether that's proper or not, and if it turns out
10:11:29 22 that the Court should ever decide that those types of
10:11:33 23 questions should be answered by both sides, I would
10:11:36 24 like to pose those questions of Dr. Verhalen by
10:11:39 25 asking them all without you having to object every

10:11:44 1 time.
10:11:45 2 MR. BORMAN: I guess that would have
10:11:46 3 to be worked out as part of the Court's order. If
10:11:50 4 the Court deems that all the depositions be open for
10:11:54 5 those questions then --
10:11:56 6 MR. LOVE: What I'm asking is that we
10:11:59 7 agree whether it makes no difference whether I ask
10:12:02 8 Dr. Verhalen all those questions today and having you
10:12:06 9 instruct him not to answer or not.
10:12:08 10 MR. BORMAN: That's my understanding

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10:12:10 11 of the position the parties are taking. That is
10:12:12 12 something that I understand will be taken up with the
10:12:15 13 Court.
10:12:15 14 MR. LOVE: That's why I asked because
10:12:18 15 I've heard that it has.
10:12:21 16 MR. BORMAN: Perry is our local man
10:12:24 17 and he's not in the room right now, but that
10:12:27 18 certainly is what I understand is going to happen.
10:12:29 19 BY MR. LOVE:
10:12:29 20 Q. So we were looking at pages 11 and 12 of your
10:12:45 21 report and your discussion of NMES on those pages.
10:12:49 22 A. Yes.
10:12:50 23 Q. You state on page 11 that the primary goal was
10:13:02 24 to provide national estimates for the use of
10:13:06 25 expenditures for health services and of health

10:13:09 1 insurance coverage among the civilian
10:13:13 2 non-institutionalized population of the United
10:13:18 3 States, right?
10:13:18 4 A. That's correct.
10:13:18 5 Q. Would you also agree that NMES - and all my
10:13:23 6 questions are about NMES II, the 1987 version - was
10:13:34 7 designed to provide a larger representation of
10:13:47 8 certain population groups including poor and low
10:13:49 9 income families so that they could be analyzed?
10:13:53 10 A. Yes.
10:13:54 11 Q. Would you agree that poor and low income
10:14:00 12 families are the -- include the types of people who
10:14:05 13 are most likely to be Medicaid recipients?
10:14:08 14 A. Yes.
10:14:09 15 Q. And would you agree that NMES can be used to
10:14:15 16 analyze and make estimates of the use of an
10:14:20 17 expenditure for health services for the United States
10:14:29 18 population of Medicaid recipients?
10:14:35 19 A. Yes.
10:14:35 20 Q. Do you agree that there are more similarities
10:14:52 21 between Minnesota Medicaid recipients and national
10:14:56 22 Medicaid recipients than there are between the
10:15:00 23 Minnesota population generally and the national
10:15:03 24 population generally?
10:15:04 25 A. No, I don't know that.

10:15:05 1 Q. You don't know one way or the other whether
10:15:09 2 there is more similarity between the first comparison
10:15:12 3 group and the second comparison group?
10:15:15 4 A. No, I really don't.
10:15:17 5 Q. So the fact that the first comparison group were
10:15:24 6 comparing both between Minnesota and the nation are
10:15:27 7 all from families with -- would be poor or have
10:15:32 8 either low income wouldn't increase the similarity
10:15:35 9 between that Minnesota group and that national group?
10:15:39 10 A. You're going to have to give me that question
10:15:41 11 again. I didn't follow you.
10:15:42 12 Q. When we compare Minnesota Medicaid recipients to
10:15:46 13 national Medicaid recipients we're generally
10:15:49 14 comparing people from poor or low income families,
10:15:54 15 correct?
10:15:54 16 A. Yes.
10:15:54 17 Q. And the fact that we have restricted our groups

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10:15:59 18 to people in poor or low income families wouldn't
10:16:03 19 make those groups more similar than we would without
10:16:06 20 that restriction, namely the entire Minnesota
10:16:10 21 population and the entire nation population?
10:16:15 22 A. Not necessarily.
10:16:16 23 Q. Does over-sampling of poor and low income
10:16:32 24 families have any effect on the ability to make a
10:16:44 25 state estimate with respect to poor and low income

10:16:48 1 families?
10:16:48 2 A. I don't think it does, no.
10:16:51 3 Q. If you turn to page 12 of the first full
10:17:01 4 paragraph on that page. What was your basis for
10:17:13 5 stating that budget constraints forced the NMES
10:17:16 6 framers into the particular design that they chose?
10:17:20 7 A. Statements within the NMES documents.
10:17:25 8 Q. Can you identify any NMES document with such a
10:17:31 9 statement?
10:17:31 10 A. Yes. Methods 3, third or fourth page, they
10:17:44 11 refer to that or maybe it's the second or third page.
10:18:00 12 If you let me take a look at it I think I can find it
10:18:04 13 for you.
10:18:05 14 Q. Dr. Verhalen, I would be happy to do that. My
10:18:18 15 difficulty is I don't have a clean copy of Methods 3
10:18:22 16 with me.
10:18:24 17 I do have a copy in which I made highlighting
10:18:29 18 and I don't want to mark that as an exhibit. I don't
10:18:33 19 think it's appropriate.
10:18:34 20 I'm trying to see if there is some way I can
10:18:38 21 help you and address my concerns as well.
10:18:40 22 A. Suffice it to say, there is a statement early
10:18:47 23 in the document where they talk about the rationale
10:18:50 24 behind doing a split sample and it mentions budget
10:19:07 25 constraints.

10:19:17 1 Q. Let me just read you one portion to see if this
10:19:20 2 refreshes your recollection at all. This is on the
10:19:22 3 first page, page 1 of the Methods 3.
10:19:26 4 There is a heading called Sample Design and it
10:19:30 5 states the analytical goals of the national medical
10:19:33 6 expenditure survey and budget constraints require
10:19:36 7 that the sample designed meet the following
10:19:38 8 requirements, and it has four bullet points.
10:19:42 9 It talks about doing interviews on a full series
10:19:46 10 of interviews on fourteen thousand households. The
10:19:50 11 sample size should be spread out over at least a
10:19:53 12 hundred separate areas, that it should produce
10:19:56 13 approximately unbiased national estimates and
10:19:59 14 estimates of adequate decision for the four census
10:20:03 15 regions, and that it should meet predesigned
10:20:09 16 precision specifications for populations, blacks,
10:20:13 17 Hispanics, the poor, near poor, sixty-five and over,
10:20:17 18 persons limited in activities of daily living.
10:20:20 19 Does that refresh your recollection as to the
10:20:22 20 part of Methods 3 that was the basis for the
10:20:26 21 statement in your report?
10:20:28 22 MR. BORMAN: I'm going to have to
10:20:28 23 object. I understand you've got a problem, but I
10:20:31 24 think it's really inappropriate to ask him to comment

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10:20:35 25 on a document when it's available and he can't look

10:20:38 1 at it.
10:20:43 2 MR. LOVE: Maybe we can make a copy of
10:20:44 3 this over break.
10:20:47 4 MR. BORMAN: Why don't you let him
10:20:49 5 look at it at least without making it as an exhibit.
10:20:53 6 MR. LOVE: That's fine if we just
10:20:56 7 limit it to this page now.
10:20:57 8 MR. BORMAN: Certainly.
10:20:59 9 BY MR. LOVE:
10:21:00 10 Q. I'm happy to find a way we can accommodate you
10:21:04 11 on this. There it is.
10:21:22 12 A. Yes. This is one place where it mentions it.
10:21:26 13 There are several other places in the documents that
10:21:29 14 I have reviewed where it goes on to elaborate on this
10:21:32 15 mentioning it several times.
10:21:34 16 Q. Mentioning what?
10:21:36 17 A. Mentioning budget constraints that forced them
10:21:40 18 in to the sampling design that they took. This is
10:21:42 19 where I first saw it. It appears elsewhere
10:21:48 20 throughout the NMES documents.
10:21:50 21 Q. Do you believe that NMES should have sampled
10:21:58 22 more than fourteen thousand households with a full
10:22:01 23 series of interviews?
10:22:02 24 A. I don't know what their samples should have
10:22:05 25 been, but it probably should have been larger, yes.

10:22:08 1 Q. Why do you say it should have been larger?
10:22:12 2 A. Because that would be the net result of doing
10:22:15 3 what I think would be necessary to make it relevant
10:22:17 4 for estimation downward.
10:22:22 5 It would include representative portions of each
10:22:25 6 and every state included in the national samples.
10:22:27 7 Q. Do you have any understanding as to why choosing
10:22:44 8 two data collection organizations was a factor of
10:22:51 9 budget constraints?
10:22:53 10 A. I seem to recall some mention in there that that
10:22:58 11 was also a part of the budget consideration. I don't
10:23:01 12 remember the precise wording.
10:23:02 13 Q. Do you have any idea why choosing two
10:23:09 14 organizations would cost less than choosing one
10:23:13 15 organization?
10:23:13 16 A. Logistics and control. Each one would have its
10:23:18 17 own portion of a sample.
10:23:20 18 Q. And that would cost less than having a single
10:23:23 19 organization do the data?
10:23:25 20 A. It could, yes.
10:23:26 21 Q. In your opinion would it have been better if
10:23:29 22 NMES had a single data collection conduct the survey?
10:23:34 23 A. Yes, because when you have two different data
10:23:38 24 organizations collecting data there is no assurance
10:23:41 25 they are going to apply absolutely identically

10:23:46 1 against the nation, and if the intention to aggregate
10:23:50 2 the data for use, you're just adding one more
10:23:53 3 potential for error.

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10:23:54 4 Q. You go on in this paragraph of page 12 of your
10:24:05 5 report to say unbiased national estimates were
10:24:11 6 sought. Do you see that in about the middle of the
10:24:16 7 paragraph?
10:24:16 8 A. Yes.
10:24:17 9 Q. Was NMES designed to provide unbiased national
10:24:24 10 estimates?
10:24:24 11 A. That was their purported goal.
10:24:29 12 Q. In your opinion did they succeed in providing unbiased
10:24:34 13 national estimates?
10:24:37 14 A. I can't say they would be unbiased any more than
10:24:44 15 any sample would be unbiased, but they probably have
10:24:47 16 determined what the directions of those biases are
10:24:50 17 and what the degree of biases that exists.
10:24:54 18 Q. That's information then that would be available
10:24:57 19 to anyone using the NMES data?
10:25:00 20 A. I would presume.
10:25:00 21 Q. At the bottom of that paragraph you state that
10:25:17 22 among some eighty-four studies listed in plaintiffs'
10:25:25 23 expert report to illustrate broad validity of NMES
10:25:31 24 analysis at the state level was resounding the
10:25:36 25 absent, correct?

10:25:38 1 A. That's what I said, yes.
10:25:41 2 Q. Dr. Verhalen, did any of those eighty-four
10:25:45 3 studies say that they would not apply at the state
10:25:49 4 level?
10:25:49 5 A. Not to the best of my recollection.
10:25:52 6 Q. Dr. Verhalen, are you aware that methodologies
10:26:21 7 have been published that take large area data and
10:26:38 8 apply them for small area estimates?
10:26:44 9 A. Yes.
10:26:44 10 Q. And leaving aside direct estimation do you
10:26:52 11 believe that that's -- that that taking of large area
10:26:58 12 data and using it to establish a small area estimate
10:27:04 13 is appropriate at times?
10:27:08 14 A. I believe it's appropriate if the smaller areas
10:27:13 15 to which it is to be applied are a sufficient sample
10:27:21 16 to be directly applied downward, yes.
10:27:25 17 Q. That would be a direct estimate, wouldn't it?
10:27:31 18 A. I said if the sample were sufficiently large to
10:27:33 19 permit a direct estimate. I didn't say to do a
10:27:36 20 direct estimate.
10:27:37 21 Q. So you might be able to make a small area
10:27:41 22 estimate from a large area survey using some
10:27:46 23 procedure other than direct estimation as long as
10:27:50 24 there was enough data in the large area survey to do
10:27:53 25 a direct distinction of the --

10:27:57 1 A. As long as a large area data base included a
10:28:02 2 suitable representative sample of the smaller area to
10:28:05 3 which the estimate is to be applied.
10:28:13 4 Q. Could that include situations in which there
10:28:16 5 would not be enough data in the large area survey to
10:28:20 6 perform a direct estimate of the smaller area?
10:28:24 7 A. I doubt that.
10:28:28 8 Q. I should probably ask that question a different
10:28:32 9 way. Would that include situations in which the data
10:28:35 10 from the large area survey did not include enough

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10:28:38 11 data from the smaller area to allow a direct estimate
10:28:44 12 of the smaller area?
10:28:46 13 A. Probably not.
10:29:05 14 MR. LOVE: Let's mark this.
10:29:40 15 (Plaintiffs' Deposition Exhibit No. 3309 - article -
10:29:40 16 marked for identification.)
10:29:43 17 BY MR. LOVE:
10:29:43 18 Q. Dr. Verhalen, I'll show you what we have marked
10:29:46 19 as Exhibit 3309, an article of the Journal of the
10:29:49 20 American Statistical Association entitled A Model
10:29:53 21 Based Approach to Estimation for Small Sub-Groups of
10:29:58 22 a Population.
10:29:59 23 I'll show this to you and tell me if that was
10:30:05 24 another one of the articles in your Minnesota
10:30:09 25 bibliography.

10:30:09 1 A. Yes, it is.
10:30:10 2 Q. It was number 142. Have you read that article
10:30:21 3 before?
10:30:22 4 A. Yes, I have.
10:30:23 5 Q. If you look at the conclusions on page 409 of
10:30:41 6 that article in the middle of the first paragraph of
10:30:51 7 the conclusions the authors state that we have
10:30:54 8 considered some simple models, but other more complex
10:30:58 9 models including regression models similar to those
10:31:02 10 employed by Erickson may also be chosen. Do you see
10:31:05 11 that?
10:31:06 12 A. Yes, I do.
10:31:07 13 Q. Is it your understanding that they're saying
10:31:09 14 that there are regression models that can be used to
10:31:14 15 make small area estimates from large area surveys?
10:31:22 16 A. That's what the author is saying, yes.
10:31:24 17 Q. In the second paragraph on the conclusions,
10:31:34 18 would you read that to yourself?
10:31:58 19 A. Okay.
10:31:58 20 Q. Do you agree with that conclusion?
10:32:01 21 A. I'm not a statistician, but while I may agree
10:32:05 22 with his conclusions, that doesn't even mean that
10:32:08 23 it's necessarily acceptable to everyone.
10:32:11 24 There is a level of imprecision that concerns me
10:32:15 25 when we get to small estimates.

10:32:17 1 Q. Have you discussed the methods described in this
10:32:39 2 article for making small area estimates from large
10:32:42 3 area surveys with anyone else?
10:32:45 4 A. No, I haven't.
10:32:47 5 Q. Do you agree that there are established
10:33:03 6 statistical methods for answering the many important
10:33:11 7 practical problems that arise in making small area
10:33:14 8 estimates from large area surveys?
10:33:16 9 A. I believe there are many methods that have been
10:33:21 10 developed which address the question. The
10:33:22 11 acceptability of them is subject to wide variation
10:33:26 12 among statisticians, just as most statistical
10:33:29 13 arguments are.
10:33:30 14 Q. Do you have your own opinion as to the
10:33:33 15 acceptability of those methods?
10:33:35 16 A. I don't accept them.
10:33:37 17 Q. You don't accept them?

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10:33:38 18 A. That's correct.
10:33:39 19 Q. Why not?
10:33:39 20 A. Given the -- I don't accept them without the
10:33:44 21 limitations I mentioned earlier, that synthetic
10:33:49 22 estimation is appropriate only when you're dealing
10:33:55 23 with a representative sample in the smaller -- in a
10:34:01 24 smaller group to which you're going to be making
10:34:04 25 estimates.

10:34:05 1 The degree to which this becomes problematic is
10:34:08 2 a function, again, of the use to which the data are
10:34:11 3 to be put.
10:34:11 4 If they're going to be used only for general
10:34:15 5 policy guidance, I would have less of a problem
10:34:18 6 because the downsize of being wrong is not quite so
10:34:27 7 onerous.
10:34:32 8 MR. LOVE: Would you mark this?
10:35:36 9 (Plaintiffs' Deposition Exhibit No. 3310 - article -
10:35:40 10 marked for identification.)
10:35:41 11 BY MR. LOVE:
10:35:41 12 Q. Dr. Verhalen, I'll show you what we have marked
10:35:56 13 as Exhibit 3310, an article from the Journal of
10:36:01 14 Economic and Social Management titled An Application
10:36:04 15 of Small Area Estimation Techniques to Derive State
10:36:10 16 Estimates of Health Insurance Coverage from the 1987
10:36:14 17 NMES. I'll ask if you've seen that before, sir.
10:36:25 18 A. All right.
10:36:46 19 Q. Have you seen that before, sir?
10:36:47 20 A. Yes.
10:36:48 21 Q. Had you seen it before Friday of last week?
10:36:57 22 A. No, I don't think so.
10:36:59 23 Q. So the first time you saw it probably was when
10:37:02 24 we designated this document for your deposition; is
10:37:05 25 that correct?

10:37:06 1 A. Right.
10:37:06 2 Q. The authors of this article are Jill Braden and
10:37:17 3 Stephen Cohen. Do you see that?
10:37:20 4 A. Yes.
10:37:21 5 Q. Do you know that Stephen B. Cohen is the director of the
10:37:28 6 Division of Statistics and Research Methodology for the
10:37:32 7 Center for Intramural Research which is part of the
10:37:35 8 Agency for Health Care Policy and Research?
10:37:38 9 A. I didn't know that, but that's fine.
10:37:40 10 Q. Are you aware that the Agency for Health Care Policy and
10:37:41 11 Research is the agency that conducts and produces NMES?
10:37:52 12 A. Yes.
10:37:52 13 Q. On the second page of this article, Exhibit
10:38:06 14 3310, in the first full paragraph the authors state
10:38:12 15 that they briefly describe three techniques for
10:38:16 16 producing small area estimates. Do you see that?
10:38:20 17 A. Yes.
10:38:20 18 Q. And then later on in that paragraph they say
10:38:26 19 that they will produce state estimates of uninsured
10:38:30 20 civilian non-institutionalized population using
10:38:35 21 health care expenses for 1987. Do you see that?
10:38:40 22 A. Yes.
10:38:40 23 Q. It's true, isn't it that Drs. Zeger, Wyant and
10:38:45 24 Miller used NMES to produce a Minnesota estimate of

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10:38:54 25 the Minnesota Medicaid population, correct?

10:38:57 1 A. Yes, I believe so.
10:38:58 2 Q. Are you familiar with any of the three
10:39:09 3 techniques that the authors of this article described
10:39:13 4 and they refer to, the first as the NCHS Synthetic
10:39:23 5 Estimator?
10:39:24 6 A. Where are you reading?
10:39:27 7 Q. On page 2 at the -- there is a heading called --
10:39:32 8 second page of the article, but it's numbered page
10:39:35 9 194. There is the heading Three Small Area
10:39:46 10 Estimation Techniques.
10:39:47 11 A. Your question is?
10:39:49 12 Q. Are you familiar with the third statement, the
10:39:55 13 NCHS Synthetic Estimator?
10:39:58 14 A. I've seen estimates to the NCHS Estimator.
10:40:07 15 Q. Have you ever used it?
10:40:09 16 A. No.
10:40:09 17 Q. Have you ever use discussed with anyone who has
10:40:13 18 used it?
10:40:13 19 A. No, I haven't.
10:40:15 20 Q. Do you have an opinion whether the NCHS
10:40:19 21 Synthetic Estimator is appropriate for making a state
10:40:23 22 estimate from a national survey?
10:40:29 23 A. Again, I think it would be appropriate in so far
10:40:33 24 as it is able to provide estimates of sufficient
10:40:38 25 precision based upon the representativeness of the

10:40:41 1 smaller area to which it is to be represented that it
10:40:45 2 meets that I would consider the minimum requirement
10:40:47 3 of precision for questions with major import as
10:40:53 4 opposed to pure policy.
10:40:59 5 Q. And your basic standard is that the national
10:41:03 6 estimate would have to have sufficient data from the
10:41:08 7 state to allow for a direct estimation?
10:41:15 8 A. For the application to which it's being put
10:41:17 9 here, yes.
10:41:18 10 Q. On page 195 of the article the authors discuss
10:41:24 11 the second technique called the Sample - Regression
10:41:29 12 Estimator. Are you familiar with that?
10:41:31 13 A. No.
10:41:32 14 Q. I take it then you don't have any opinion about
10:41:38 15 the use of what estimator since you're not familiar
10:41:40 16 with it?
10:41:40 17 A. Nothing that would deviate from what the
10:41:44 18 general position of mine that I pointed out is, that
10:41:47 19 the estimator must be capable of providing an
10:41:51 20 estimate of sufficient precision in this application,
10:41:59 21 and this does not suggest that it gives any greater
10:42:05 22 precision than would any others. It's still got a
10:42:10 23 rather large error attached to it.
10:42:12 24 Q. I take it then your answer is really the same as
10:42:19 25 what we talked about with the NCRS Estimator?

10:42:23 1 A. That's correct.
10:42:24 2 Q. And on page 196 the third technique is called
10:42:27 3 the Base Unit Estimator. Are you familiar with that?

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10:42:32 4 A. Called a what?
10:42:34 5 Q. Base Unit Estimator, the top of page 196.
10:42:39 6 A. Same, same discussion.
10:42:40 7 Q. Are you familiar with that estimator?
10:42:42 8 A. No, I am not.
10:42:44 9 Q. Do you know to what extent and whether Drs.
10:42:48 10 Zeger, Wyant and Miller in preparing that report used
10:42:55 11 any of those three estimators?
10:42:58 12 A. I recall them saying that they essentially used
10:43:03 13 a direct estimate.
10:43:14 14 Q. And none of these three estimators described in
10:43:26 15 the article in Exhibit 3310 is a direct estimate, is
10:43:32 16 it?
10:43:32 17 A. That's correct.
10:43:34 18 Q. So I take it then it's your understanding that
10:43:39 19 Drs. Zeger, Wyant and Miller did not make any use of
10:43:43 20 these three estimators in their work?
10:43:47 21 A. I don't recall having seen one, no.
10:43:49 22 Q. Do you know if they used anything that was
10:43:57 23 similar to one of these three estimators?
10:44:02 24 A. I'm not a statistician. I can't talk about
10:44:03 25 similarities.

10:44:24 1 Q. On page 13 of your report, Exhibit 3301, there
10:45:03 2 is a quotation from NMES in the middle of the page.
10:45:10 3 Do you see that?
10:45:10 4 A. Yes.
10:45:11 5 Q. And a few lines above that you're discussing
10:45:16 6 what -- I believe you're discussing what you did at
10:45:18 7 CPSC when you had to commit specific dollar amounts
10:45:24 8 to any of your projects; is that correct?
10:45:26 9 A. That's correct.
10:45:27 10 Q. What information did you use to commit specific
10:45:31 11 dollar amounts to remedial projects?
10:45:34 12 A. We used the NEISS data.
10:45:49 13 Q. Isn't it true that the NEISS data is a broad
10:45:53 14 national survey?
10:45:54 15 A. Yes, it is.
10:45:56 16 Q. After the quote from NMES on that page you state
10:46:17 17 that the question is what would be adequate for
10:46:20 18 specific commitments of resources of reliable damages
10:46:26 19 estimate. You asked that rhetorical question,
10:46:28 20 correct?
10:46:28 21 A. Yes.
10:46:29 22 Q. And then you say if no data set exists that is
10:46:37 23 sufficient to give the information that you feel you
10:46:40 24 need that such a data set must be created; is that
10:46:43 25 right?

10:46:43 1 A. That's correct.
10:46:44 2 Q. What data set would the State of Minnesota have
10:46:49 3 to create in order to estimate the smoking
10:46:57 4 attributable health care costs, leaving aside your
10:47:02 5 causation objection which would never allow to you
10:47:04 6 make such an estimate?
10:47:06 7 A. I can't tell you off the top of my head. If I
10:47:09 8 were to discuss that, I would want to really get into
10:47:12 9 what the questions were that we were going to try to
10:47:16 10 answer and spend some time developing.

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10:47:19 11 Q. And in performing your work in this litigation
10:47:26 12 did you ever consider what data would be needed to
10:47:30 13 make those types of estimates?
10:47:32 14 A. No. I considered what data were absent.
10:47:47 15 Q. What absent data did you conclude would need to
10:47:52 16 be gathered to make those types of estimates?
10:48:00 17 A. This is what we have been discussing for the
10:48:03 18 past two days; information on a very specific
10:48:10 19 population for which we're trying to make the
10:48:11 20 estimates in the State of Minnesota with a known
10:48:15 21 error and -- I could stop right there.
10:48:22 22 Q. If we did the full NMES survey to fifteen
10:48:37 23 thousand households in Minnesota would that give
10:48:43 24 us the data we need to make the estimate leaving
10:48:46 25 aside your causation concerns?

10:48:49 1 A. It might.
10:48:49 2 Q. Can you tell me any reason why it might not?
10:48:53 3 A. It would depend on how the questions were asked,
10:48:56 4 whether they were asked in such a way that you were
10:48:59 5 confident that the questions were being properly
10:49:02 6 interpreted and answered properly.
10:49:03 7 Q. Just as they were answered in NMES?
10:49:07 8 A. It might.
10:49:08 9 Q. And again, I'll ask you, can you tell me in any
10:49:13 10 way why using the exact NMES questions that
10:49:18 11 Minnesota might not provide the data that would be
10:49:21 12 needed?
10:49:21 13 A. I don't know if fifteen thousand households in
10:49:25 14 Minnesota would be a proper size. I don't know what
10:49:27 15 that size would be. I would have to sit down and
10:49:30 16 consider it.
10:49:31 17 Q. If we agree there is some size that the entire
10:49:35 18 state that needs to be surveyed, correct?
10:49:39 19 A. Yes.
10:49:39 20 Q. And if we just assume we have got a size that
10:49:43 21 you find to be adequate and we ask the exact NMES
10:49:48 22 questions to this Minnesota survey of that size would
10:49:51 23 we then have the data we need to make these
10:49:54 24 estimates, leaving aside your causation concerns?
10:49:57 25 A. These estimates.

10:49:58 1 Q. These estimates that Drs. Zeger, Wyant and
10:49:59 2 Miller make in their report?
10:50:09 3 A. I don't know. They might be.
10:50:11 4 Q. Can you tell me any reason why they might not
10:50:16 5 be?
10:50:16 6 A. They might not be precisive.
10:50:20 7 Q. The questions or the data?
10:50:23 8 A. The data.
10:50:24 9 Q. How precise would they have to be?
10:50:31 10 A. I don't know. I would have to sit down and
10:50:33 11 consider that.
10:50:34 12 Q. Would you need to consult with a statistician to
10:50:38 13 do that?
10:50:39 14 A. I would undoubtedly consult with a statistician.
10:50:49 15 Q. Would you turn to pages 14 and 15 of your report?
10:51:22 16 A. Okay.
10:51:23 17 Q. I'd like you to refer to the discussion at the

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10:51:26 18 bottom of 14 and the top of 15 involving the lead
10:51:32 19 paint example that you give.
10:51:34 20 A. Yes.
10:51:44 21 Q. While you were with the CPSC did it ever
10:51:50 22 regulate the amount of lead in paint?
10:51:53 23 A. It was charged with the responsibility for
10:51:58 24 regulating the amount of paint which was imposed on
10:52:01 25 it by the Congress.

10:52:04 1 Q. The amount of lead in paint, not the amount of
10:52:07 2 paint?
10:52:07 3 A. I'm sorry. The amount of lead in paint.
10:52:10 4 Q. So CPSC regulated it at a level dictated by
10:52:19 5 Congress?
10:52:19 6 A. That's correct.
10:52:20 7 Q. Did CPSC ever make a determination on its own as
10:52:28 8 to what level if any it should -- at which it should
10:52:34 9 regulate lead paint?
10:52:37 10 A. No, it didn't. The argument was that the CPSC
10:52:42 11 could not come to a conclusion at what level lead in
10:52:44 12 paint would be safe, therefore they chose not to
10:52:48 13 regulate and that's when Congress imposed its will.
10:52:52 14 Q. If Congress had not imposed its will is it fair
10:52:58 15 to say that the CPSC would not have established any
10:53:02 16 regulations regarding the amount of lead in paint?
10:53:05 17 A. It's fair to say that in all likelihood they
10:53:08 18 would not have, that's correct.
10:53:10 19 Q. Would manufacturers then be free to use any
10:53:21 20 level of leaded paint that they chose?
10:53:24 21 A. Presumably, yes.
10:53:25 22 Q. Did CPSC believe that lead was a significant
10:53:48 23 cause of harm?
10:53:52 24 A. What was the first word in your question; could
10:53:55 25 they or did they?

10:53:57 1 Q. Did they conclude that lead was a significant
10:54:02 2 cause of harm to people?
10:54:05 3 A. A significant cause of potential harm, yes.
10:54:06 4 Q. Did the CPSC also conclude that lead in paint
10:54:16 5 was a significant source of lead exposure?
10:54:20 6 A. No, they really couldn't.
10:54:25 7 Q. Why was that?
10:54:26 8 A. They could only conclude that it was a major
10:54:30 9 source.
10:54:31 10 Q. What's the difference between a major source and
10:54:34 11 a significant source?
10:54:35 12 A. Significant has a statistical connotation to
10:54:38 13 meet. There are a variety of sources which lead -- a
10:54:42 14 variety of sources of lead which can lead to blood
10:54:46 15 lead levels that are undesirable.
10:55:03 16 Q. Why is it better to have no regulation of the
10:55:06 17 amount of lead in paint than some regulation of that
10:55:11 18 amount?
10:55:11 19 A. I didn't say it was better.
10:55:13 20 Q. Did you agree with the CPSC's conclusion that it
10:55:22 21 did not have enough data to establish a safe level?
10:55:26 22 A. I did.
10:55:27 23 Q. Did you think it was best for the CPSC to
10:55:49 24 establish an allowable level for lead in paint or to

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10:55:57 25 not establish any level?

10:56:00 1 A. I didn't have an official position on that,
10:56:03 2 but -- other than as director of epidemiology, I felt
10:56:07 3 that if we could not identify a safe level, you could
10:56:12 4 probably be better to not try to identify a level
10:56:16 5 because it implies safety, and people might be going
10:56:22 6 forward with that notion that it is safe.
10:56:26 7 Q. Prior to establishing a maximum level of lead in
10:56:38 8 paint had the paint manufacturers been following some
10:56:51 9 uniform standard?
10:56:54 10 A. I don't know what their standard was. I know
10:56:58 11 that lead was used in paint as a dryer and they would
10:57:01 12 not want to put in so much lead that it would dry too
10:57:04 13 quickly, nor so little that it wouldn't dry quickly
10:57:08 14 enough. So I presume there was a standard.
10:57:11 15 Q. When Congress did establish through the CPSC a
10:57:16 16 maximum level of lead in paint was that higher or
10:57:23 17 lower than the levels in the paint that was being
10:57:27 18 sold at that time?
10:57:29 19 A. Lower.
10:57:29 20 Q. Was that so the manufacturers were required to
10:57:35 21 reduce the level in the level that they were
10:57:39 22 manufacturing?
10:57:40 23 A. That's correct.
10:57:40 24 Q. In your position at the CPSC did you have any
10:57:57 25 opinion as to whether that would be a benefit to the

10:58:09 1 population?
10:58:12 2 A. No. There was no way to know because we didn't
10:58:15 3 know the source of lead poison in the population at
10:58:20 4 large.
10:58:20 5 We only knew that there were a variety of
10:58:22 6 sources; paint was one of them, automobile emissions
10:58:26 7 are another, and there were several others that were
10:58:32 8 listed. I don't recall what they were.
10:58:33 9 Q. Were there better limits on the amount of lead
10:58:41 10 in automobile fuel existing at that time?
10:58:44 11 A. I don't recall if there were at that time, but
10:58:46 12 that was not an item under our jurisdiction.
10:58:51 13 Q. After this maximum level of lead in paint was
10:59:13 14 established do you know whether lead poison
10:59:19 15 decreased?
10:59:19 16 A. I have no idea.
10:59:21 17 Q. Did the CPSC make any effort to determine that?
10:59:26 18 A. No, we didn't.
10:59:28 19 Q. Why not?
10:59:28 20 A. It was a Commission decision not to.
10:59:32 21 Q. Not your decision?
10:59:33 22 A. Not my decision.
10:59:35 23 Q. Is that information that you would have liked to
10:59:38 24 have obtained?
10:59:38 25 A. Not necessarily because my own view was the

10:59:41 1 chronic hazards were far more difficult to address
10:59:48 2 with the limited budget our Commission had, and there
10:59:51 3 were a sufficient number of acute hazards for us to

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10:59:55 4 be worrying about.
10:59:57 5 Larger agencies such as the EPA had budgets
11:00:02 6 which could address this much more effectively.
11:00:29 7 Q. Dr. Verhalen, let's continue our discussion with
11:00:35 8 synthetic estimation which are on pages 17 and 18 of
11:00:44 9 your report.
11:00:45 10 At the bottom of page 18 you state the reliance
11:00:49 11 on synthetic estimations procedures to construct
11:00:50 12 estimates for smaller areas -- I read that wrong.
11:00:54 13 You state that reliance on synthetic estimation
11:00:57 14 procedures to construct estimates for areas smallest
11:01:00 15 than the lowest area for which a sample was designed
11:01:05 16 also seems somewhat chancy; is that correct?
11:01:07 17 A. That's correct.
11:01:08 18 Q. What do you mean that it seems somewhat chancy?
11:01:13 19 A. That it wasn't precise enough for the purposes
11:01:19 20 to which the data were to be used.
11:01:22 21 Q. How chancy is that?
11:01:27 22 A. I don't know, but you would want to reduce the
11:01:33 23 likelihood of being wrong to the lowest possible
11:01:37 24 level where you're going to be taking major, what I
11:01:39 25 would consider, Draconian steps to require payment

11:01:43 1 based upon estimates which are in themselves
11:01:48 2 inprecise from a variety of other perspectives as
11:01:52 3 well before you can get to synthetic estimation.
11:02:11 4 Q. What types of government agency decisions would
11:02:16 5 you put at the same level in terms of needing
11:02:21 6 precision as you do for making damages' estimates in
11:02:27 7 this case?
11:02:27 8 A. Probably any government agency which is
11:02:44 9 addressing a specific problem that has major direct
11:02:49 10 provable one for one impact on health or dollars.
11:03:05 11 Q. If a government agency is deciding the relative
11:03:11 12 amount of budget to put towards one health care issue
11:03:16 13 versus another health care issue does that require
11:03:19 14 the same degree of precision that you would require
11:03:22 15 for the estimates in this litigation?
11:03:24 16 A. No, I don't think so because it's easily
11:03:29 17 correctable.
11:03:29 18 Q. So in your opinion that wouldn't have a major
11:03:32 19 effect on health, the decision of how much of a
11:03:36 20 budget to put towards one issue towards another?
11:03:39 21 A. Not necessarily because you can change your mind
11:03:42 22 six months, a year, two years down the pike. You
11:03:45 23 have not made an irreparable decision.
11:03:57 24 Q. Can you give me an example of any decision that
11:03:59 25 was made by the CPSC for which you required the same

11:04:05 1 degree of precision that you would like to require in
11:04:07 2 this litigation for the estimates of smoking
11:04:10 3 attributable health care costs?
11:04:14 4 A. Again, probably only the Worm Probe issues which
11:04:27 5 actually destroyed an industry.
11:04:34 6 Q. Can you think of any other decisions of the CPSC
11:04:37 7 or actions of the CPSC that required that same level
11:04:40 8 of precision?
11:04:43 9 A. I don't think so, no.
11:04:45 10 Q. So it's your belief that the smoking

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11:04:51 11 attributable health care estimates in the Zeger,
11:04:57 12 Wyant, Miller report are sufficient to destroy the
11:05:06 13 tobacco industry?
11:05:08 14 A. I don't know if they're sufficient to destroy
11:05:11 15 the tobacco industry, but I know that if penalty
11:05:17 16 assessed it's a pretty major penalty and you would
11:05:20 17 want to be as precise as you can with it.
11:05:23 18 Q. Did the CPSC have authority to require payments
11:05:39 19 by any product manufacturer?
11:05:40 20 A. Yes, they did.
11:05:40 21 Q. Did they ever do that?
11:05:42 22 A. Yes, they did.
11:05:43 23 Q. And in those instances did you require the CPSC
11:05:48 24 to base this decision on -- with information and to
11:05:54 25 the same degree of precision that you were requiring

11:06:00 1 the smoking attributable health care estimates in
11:06:05 2 this case?
11:06:05 3 A. Those decisions to the best of my recollection
11:06:07 4 were never predicated on the data we collected, but
11:06:10 5 on the actual of a particular industry as it applied
11:06:16 6 to the law with respect to them.
11:06:18 7 Q. So these were in the nature of fines as opposed
11:06:20 8 to damages?
11:06:21 9 A. That's correct.
11:06:21 10 Q. I take it that in imposing those fines you did
11:06:32 11 not require the same degree of precision that you are
11:06:35 12 requiring of the smoking material health care
11:06:38 13 estimates in this case?
11:06:39 14 A. I wasn't even in that loop. That was a decision
11:06:42 15 between the general counsel's office, the director of
11:06:45 16 compliance and the commissioners.
11:06:46 17 Q. Do you know if they required the same degree of
11:06:50 18 precision that you are requiring of the smoking
11:06:52 19 attributable health care estimates in this case?
11:06:54 20 A. I know for a fact they did not.
11:06:57 21 Q. You know for a fact they did not, they required
11:07:02 22 less precision; is that correct?
11:07:05 23 A. They weren't using data, they were using
11:07:07 24 violations of the law as a criteria.
11:07:10 25 Q. Would you turn to page 18 of your report? The

11:07:35 1 last portion of your discussion of synthetic
11:07:42 2 estimation you state that it is inappropriate to
11:07:48 3 casually pass off the application of such a
11:07:51 4 sophisticated concept as - quote - it is essentially
11:07:55 5 what we do to estimate smoking attributable
11:07:59 6 expenditures in Minnesota - end quote. Do you see
11:08:03 7 that?
11:08:03 8 A. Yes.
11:08:03 9 Q. In your opinion in the refined model and the
11:08:11 10 refined estimates of Drs. Zeger, Wyant and Miller as
11:08:15 11 opposed to the core estimates do you believe that
11:08:18 12 they inappropriately casually passed off the
11:08:22 13 application of synthetic estimation as the quote here
11:08:27 14 on page 18 cites?
11:08:30 15 A. Well, it is a quote.
11:08:37 16 Q. My question is, is that what you believe they
11:08:40 17 did in the refined estimate as opposed to the core

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11:08:43 18 estimate?
11:08:43 19 A. Yes.
11:08:45 20 Q. What is your understanding of the way in which
11:09:02 21 the refined model makes a state estimate from
11:09:10 22 national data?
11:09:11 23 A. I don't have a full description of that, and
11:09:13 24 that's why I go on to say in here that they provide
11:09:16 25 no indication they employed any, but the simplest

11:09:20 1 most direct method of estimation.
11:09:25 2 Q. And I think we discussed yesterday you haven't
11:09:28 3 seen any of the information on computer disks that
11:09:31 4 they provided along with their expert report,
11:09:34 5 correct?
11:09:34 6 A. That's correct.
11:09:35 7 Q. Is it possible that reviewing that information
11:09:43 8 would give you more information about the type of
11:09:47 9 synthetic information they conduct?
11:09:50 10 A. It's possible.
11:09:50 11 Q. In forming your opinions do you think it's
11:09:59 12 important to look at that information?
11:10:00 13 A. I think it would be important to look -- be
11:10:03 14 important to look at any information that can
11:10:06 15 enlighten me about the methods that they employed.
11:10:09 16 Q. Have you requested that information from anyone?
11:10:13 17 A. I requested whatever information was available
11:10:15 18 at the time that I was looking at this, and that's
11:10:18 19 what I used to draw my conclusions.
11:10:20 20 Q. And the time that you were looking at this was
11:10:22 21 basically the month of June, correct?
11:10:25 22 A. I believe so.
11:10:26 23 Q. Yesterday we talked about expert reports from
11:10:40 24 the defendants that you had seen, and there was one
11:10:43 25 other one I wanted to ask you about. Have you seen a

11:10:47 1 report of Professor Rubin?
11:10:49 2 A. Yes, I've seen it.
11:10:51 3 Q. Do you have a copy of it?
11:10:53 4 A. No, I don't. Not with me, no.
11:10:56 5 Q. Back in your office?
11:10:58 6 A. Yes.
11:10:58 7 Q. Have you read that report?
11:11:00 8 A. Not carefully, no.
11:11:01 9 Q. I think yesterday you told me that you had
11:11:08 10 scanned some reports. Would you say that you scanned
11:11:10 11 Dr. Rubin's report?
11:11:11 12 A. Yes, I'm sure I did.
11:11:13 13 Q. Do you have any plans to review that report
11:11:17 14 further?
11:11:17 15 A. Yes, when I have time.
11:11:19 16 Q. Are you familiar with the concept of multiple
11:11:49 17 imputation of missing data?
11:11:52 18 A. I'm not familiar with it, I'm aware of it.
11:11:56 19 Q. Are you familiar with propensity scoring
11:12:03 20 methods?
11:12:04 21 A. Again, I'm aware of it.
11:12:04 22 Q. Have you ever used them?
11:12:07 23 A. No.
11:12:07 24 Q. Can you think of any situation in which the CPSC

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used propensity scoring methods?

A. Not offhand, no.
Q. Can you think of any situation in which the CPSC used multiple imputation methods for missing data?
A. I think there were some times when they imputed data for some of the esoteric analysis on all terrain vehicles which came out after I left the agency, but I'm not very familiar with that.
Q. Do you know what methods of imputation the CPSC used for that?
A. No.
Q. Other than that situation have you reviewed any work in which multiple imputation was conducted?
A. Undoubtedly.
Q. Do you know what imputation methods were used in those works?
A. I can't give you anything off the top of my head. I can't even think of the particular studies, but I've read a lot of studies.
Q. Do you know what a full bastion method of multiple imputation would be?
A. Again, these are things I've heard of, but I'm not a statistician.
MR. LOVE: Let's take a break.
(Recess taken.)
BY MR. LOVE:

Q. Dr. Verhalen, if you would turn to page 9 of your report, in particular the last bullet point there.
A. I can't read the numbers on them and I think mine may be reversed.
Q. Epidemiology has its limitations?
A. Yes.
Q. The first arrow point under that bullet point states that the concept of attributable risk cannot be readily applied to situations with intertwined multi-causal association and long temporal effects. Is that your opinion?
A. Yes, it is.
Q. Can attributable risk be applied at all to those situations?
A. To complex intertwined effects and -- multi-causal association and temporal effects?
Q. Yes.
A. Sometimes if you can assess and measure those associations. You have to know how many of them exist and the population is doing what their direct influence is and what any synergy between them and other potential effects of any particular exposure may be, what other exposure may lead to the same general medical condition. All of those things have

to be taken into account.
Q. Is that another way of saying that you would have to control for every possible confounder?

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11:18:51 4 A. Every known confounder, yes.
11:18:54 5 Q. Based on your review of the literature is it
11:19:07 6 your testimony that there is no information about
11:19:19 7 smoke's attributable risk to lung cancer, for
11:19:24 8 instance, where all known confounders have been
11:19:28 9 controlled for?
11:19:29 10 A. Not that I have seen.
11:19:30 11 Q. Even if you controlled for all known confounders
11:19:39 12 would synergistic effects still be a problem?
11:19:45 13 A. Could be.
11:19:46 14 Q. How would that be?
11:19:47 15 A. Just a synergy between different compounders
11:19:51 16 that may exist or coexist. A potential source of a
11:20:00 17 condition coexisting with a second potential source
11:20:06 18 may be worse or not worse than it would be acting
11:20:10 19 independently.
11:20:11 20 Q. And does controlling for confounders take
11:20:19 21 control of that synergy?
11:20:21 22 A. What?
11:20:23 23 Q. Does controlling for confounders take control of
11:20:27 24 that synergy?
11:20:28 25 A. Not necessarily. You would have to know what

11:20:31 1 synergies and try and figure those out as well or
11:20:37 2 adjust for them.
11:20:39 3 Q. What about the relationship between smoking and
11:20:58 4 COPD? Having reviewed the literature is it your
11:21:03 5 belief that all of the known confounders of that
11:21:10 6 relationship have not been controlled for at one time
11:21:13 7 or another?
11:21:14 8 A. That's correct.
11:21:17 9 Q. Can you give me an example of a known confounder
11:21:23 10 that has never been controlled for?
11:21:25 11 A. No, I can't give you anything that has never
11:21:28 12 been controlled for, but they all have to be
11:21:31 13 controlled for in any given circumstance at the time
11:21:33 14 you're doing your research.
11:21:36 15 Q. So you need a single study that controls for all
11:21:39 16 known confounders at the same time?
11:21:41 17 A. That's right.
11:21:42 18 Q. And also controls any synergies in effect that
11:21:50 19 exist?
11:21:51 20 A. That's right.
11:21:53 21 Q. If you look at page 20 of your report --
11:22:39 22 actually pages 19 and 20 where you discuss
11:22:42 23 attributable risk in more detail, you conclude by
11:22:55 24 stating on page 20 that because of the intertwined
11:23:01 25 multi-causal associations and long latency period it

11:23:08 1 becomes very --
11:23:09 2 A. Where are you reading?
11:23:11 3 Q. See it there, page 20?
11:23:14 4 A. Okay.
11:23:14 5 Q. It becomes very difficult to employ the
11:23:21 6 relatively simplistic computation of attributable
11:23:25 7 risk. Do you see that?
11:23:27 8 A. Yes.
11:23:27 9 Q. Although it might be very difficult in your opinion is
11:23:32 10 it possible to employ the concept of attributable risk

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11:23:38 11 in those circumstances?
11:23:38 12 A. It's possible to employ it, the interpretation of it,
11:23:43 13 however, has to be very guarded because of potential --
11:23:48 14 for having overlooked other potential causes.
11:23:59 15 Q. Is it your opinion because in the case of
11:24:07 16 smoking's relationship with major smoking related
11:24:13 17 attributable diseases that -- withdraw that.
11:24:19 18 Is it your understanding that there is no study
11:24:32 19 of the relationship between smoking and any of the
11:24:35 20 major smoking attributable diseases listed in the
11:24:39 21 Zeger, Wyant Miller report that controls for all
11:24:44 22 confounders -- all known confounders?
11:24:50 23 A. Not having read all of the documents in there,
11:24:53 24 there is no way I can say with assurance that none of
11:24:56 25 them do, but none of the ones that I have read have

11:25:00 1 controlled for all of them, that's correct.
11:25:03 2 Q. And unless for a particular disease there was a
11:25:06 3 study that controlled for all known confounders would
11:25:10 4 it be your opinion that one cannot compute
11:25:19 5 attributable risk in a way that can be used to
11:25:26 6 estimate smoking attributable health care costs for
11:25:30 7 that disease?
11:25:32 8 A. Not with the degree of precision necessary for
11:25:38 9 the application that's being made here. If you were
11:25:41 10 doing it for general program guidance that I toured
11:25:48 11 where you might want to address remedial measures
11:25:50 12 perhaps, it's of sufficient precision, but there is
11:25:55 13 no way to ensure with a degree of certainty with this
11:26:02 14 high impact that you have properly attributed the
11:26:05 15 cause to -- or the condition to any single cause.
11:26:12 16 Q. Even in a problemistic sense?
11:26:15 17 A. That's correct.
11:26:20 18 Q. Earlier today we talked about flaws that you
11:26:34 19 believe exist in the NMES data, correct?
11:26:38 20 A. Yes.
11:26:39 21 Q. Did you find any flaws in the State of Minnesota
11:26:46 22 claims' data that was used by Drs. Zeger, Wyant and
11:26:48 23 Miller?
11:26:51 24 A. Not offhand that I recall. There may well have
11:26:59 25 been, but I didn't list any. I can't think of any

11:27:02 1 offhand though.
11:27:03 2 Q. Did you find any flaws in the Blue Cross Blue
11:27:07 3 Shield of Minnesota claims' data that was used by
11:27:13 4 Drs. Ziegler, Wyant and Miller?
11:27:15 5 A. Same answer.
11:27:16 6 Q. I understand that you did review Dr. Miller's
11:27:37 7 deposition and exhibits in the Mississippi
11:27:39 8 litigation.
11:27:42 9 A. Yes, sometime ago.
11:27:44 10 MR. BORMAN: Which Dr. Miller are we
11:27:45 11 talking about?
11:27:47 12 BY MR. LOVE:
11:27:47 13 Q. Dr. Leonard Miller.
11:27:50 14 A. Yes, I did.
11:27:53 15 Q. Is the model that was being described there in
11:28:00 16 the Mississippi litigation during that deposition in
11:28:06 17 the documents as what is referred to as the Robert

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11:28:08 18 Wood Foundation Model?
11:28:12 19 A. I don't recall if that's what they called it. I
11:28:15 20 know that Robert Wood Johnson had funded the
11:28:19 21 development of the model.
11:28:23 22 Q. So we're talking about the same model anyway?
11:28:26 23 A. I believe so.
11:28:26 24 Q. Is that the model that you -- withdraw that
11:28:42 25 question. Is that the model that you were addressing

11:28:45 1 in the Mississippi litigation at the time you were
11:28:48 2 preparing to be deposed in that case?
11:28:50 3 A. No.
11:28:51 4 MR. BORMAN: Before we go on, I will
11:28:54 5 interpose a general objection. I am concerned since
11:28:57 6 there were several iterations of Leonard Miller's
11:29:00 7 model, without having the document in front of him it
11:29:05 8 is easy to be talking about two different models,
11:29:09 9 because I think Dr. Verhalen has been a little
11:29:13 10 qualified of his acknowledgement of which model we're
11:29:16 11 talking about.
11:29:17 12 And I'm concerned since there were several
11:29:19 13 versions that we may not be addressing the same one.
11:29:25 14 MR. LOVE: I understand your
11:29:26 15 objection, but you can go ahead and answer. Would
11:29:44 16 you read the question back?
11:29:44 17 (Record read.)
11:29:48 18 THE WITNESS: I don't believe so. I
11:29:49 19 think that by the time I was preparing for deposition
11:29:53 20 in Mississippi I was looking at the Vernon Miller
11:29:56 21 model.
11:30:01 22 MR. BORMAN: Do you mean Vincent
11:30:03 23 Miller?
11:30:05 24 THE WITNESS: I'm sorry. Vincent
11:30:06 25 Miller. Beg your pardon. V. Miller.

11:30:12 1 BY MR. LOVE:
11:30:12 2 Q. Do you have any opinion as to whether the model
11:30:15 3 used by Drs. Zeger, Wyant and Leonard Miller is more
11:30:23 4 appropriate for estimating smoking attributable
11:30:31 5 health care costs than the Robert Wood Johnson
11:30:34 6 Foundation Model that Leonard Miller was using?
11:30:39 7 MR. BORMAN: Same objection.
11:30:42 8 THE WITNESS: I think there have been
11:30:44 9 several refinements. I can't put my finger on them,
11:30:47 10 but over the months there have been, as Mr. Borman
11:30:51 11 said, several iterations, each one which had
11:30:55 12 additional refinements.
11:30:56 13 And this last one had additional
11:30:59 14 refinements. Whether or not that made it more
11:31:03 15 appropriate or not, I have my doubts because my
11:31:05 16 reservations as expressed here haven't changed.
11:31:11 17 There may be a few places it was cleaned up is all.
11:31:15 18 BY MR. LOVE:
11:31:15 19 Q. Do you have any opinion as to whether the model
11:31:33 20 in the Zeger, Wyant, Miller report is better for
11:31:42 21 estimating smoking attributable health care costs
11:31:45 22 than any of the models that you reviewed in the
11:31:49 23 Mississippi litigation?
11:31:52 24 A. I don't know that. I know that I don't find the

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11:31:58 25 model adequate.

11:31:58 1 Q. Which model?
11:31:59 2 A. The current model that's used by the State of
11:32:04 3 Minnesota.
11:32:07 4 Q. So you have no opinion on the relative merits of
11:32:10 5 the Robert Wood Johnson Model or any of the other
11:32:13 6 models, the Mississippi vis-a-vis the Minnesota
11:32:18 7 model?
11:32:18 8 A. That's correct, with the addition of the fact
11:32:21 9 that I recognize and acknowledge there have been some
11:32:24 10 changes and attempts to improve it.
11:32:26 11 Q. Which one?
11:32:28 12 A. The current model being used by the State of
11:32:31 13 Minnesota.
11:32:32 14 Q. And you recognize that the current model in
11:32:37 15 Minnesota includes -- it tends to improve the models
11:32:44 16 used in Mississippi; is that what you are saying?
11:32:47 17 A. That's what I was saying.
11:32:48 18 Q. Do you believe any of those attempts were
11:32:50 19 successful?
11:32:51 20 A. I don't believe they were adequate.
11:32:53 21 Q. Do you believe that the model was improved in
11:32:59 22 any way?
11:32:59 23 A. It may have been. I don't know.
11:33:01 24 Q. Do you have any opinion regarding the relative
11:33:14 25 merit of any model used for estimating health --

11:33:21 1 smoking attributable health care costs in the Texas
11:33:24 2 litigation versus the Minnesota model?
11:33:27 3 A. No, because I really don't look at them
11:33:33 4 juxtaposed to one another.
11:33:35 5 Q. What do you mean by that?
11:33:37 6 A. I look at the model that you're using in
11:33:39 7 Minnesota and determine whether or not it meets what
11:33:43 8 I would think would be necessary as a model to make
11:33:46 9 estimates for the State of Minnesota.
11:33:49 10 I find them wanting for reasons what we have
11:33:53 11 discussed over the past two days, and I don't look
11:33:55 12 back to the other models to see whether or not they
11:33:58 13 would be better, worse or anything else because I
11:34:01 14 don't think they're relevant.
11:34:02 15 Q. So you don't have any opinion then about the
11:34:04 16 relative merits of any of these models?
11:34:16 17 A. No, I don't.
11:34:17 18 Q. Dr. Verhalen, are you familiar with an analysis
11:34:46 19 that was performed by Dr. Manning in examining costs
11:35:00 20 associated with smoking?
11:35:02 21 A. I recall having looked at something fairly early
11:35:06 22 on and I think it was among my list of documents.
11:35:09 23 Q. I'm referring to a book called The Cost of Poor
11:35:36 24 Health Habits by Willard G. Manning. Is that what
11:35:41 25 you're referring to?

11:35:42 1 A. No. I'm talking about his article, Taxes of
11:35:56 2 Sins. Do Smokers and Drinkers Pay Their Way.
11:36:11 3 Q. In reviewing the expert reports of Foster or

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11:36:18 4 Rubin or McCall and Ahlberg or Wecker do you recall
11:36:29 5 an argument that Drs. Zeger, Wyant and Miller are
11:36:38 6 addressing the wrong question in their analysis, and
11:36:41 7 that what they should be looking at is what are the
11:36:46 8 costs resulting from any conduct of the tobacco
11:36:52 9 industry in providing data or withholding data or
11:37:05 10 developing a safer cigarette?
11:37:13 11 A. Is that the end of your question?
11:37:15 12 Q. Yes.
11:37:15 13 A. I recall some mention of the fact they should be
11:37:19 14 measuring things with reference to wrongdoing, but as
11:37:23 15 I said, I just scanned those articles. I didn't read
11:37:27 16 them thoroughly, those reports.
11:37:31 17 Q. Do you believe that the data exists that would
11:37:35 18 allow one to measure the health care costs resulting
11:37:45 19 from such wrong doing?
11:37:46 20 A. I have no idea. I hadn't given it any thought
11:37:51 21 yet.
11:37:51 22 MR. LOVE: Would you mark this for us
11:37:51 23 please?
11:37:51 24 (Plaintiffs' Deposition Exhibit No. 3311 - article -
11:38:55 25 marked for identification.)

11:39:06 1 BY MR. LOVE:
11:39:06 2 Q. Dr. Verhalen, do you believe that it's possible
11:39:15 3 to measure with a marked degree of precision that you
11:39:19 4 require for smoking attributable health care
11:39:24 5 estimates the cost involved when a person who had
11:39:34 6 smoked for X years continued smoking for another
11:39:38 7 period of time, let's say Y years? Could you measure
11:39:40 8 the costs associated with that during the Y period?
11:39:53 9 A. Someone who continued to smoke for X years and
11:39:57 10 then quit for Y years?
11:39:59 11 Q. No. They had smoked for X years, let's just say
11:40:02 12 ten years, and they continued to smoke for another
11:40:06 13 five years.
11:40:06 14 Do you believe it's possible to measure with a
11:40:09 15 degree of precision that you require the health care
11:40:13 16 costs attributable to that second five year period of
11:40:16 17 smoking?
11:40:17 18 A. My guess is that conceivably it could be. It
11:40:23 19 would probably be expensive because you would need an
11:40:26 20 awful large sample of people with very discreet
11:40:29 21 information on smoking habits and length of smoking.
11:40:34 22 Anything's possible, but you have to be willing
11:40:36 23 to pay the price to collect the data.
11:40:39 24 Q. Do you believe that any of the data that you've
11:40:53 25 seen would allow that type of estimate to be made?

11:40:56 1 A. Not so far.
11:40:58 2 Q. Would you have the same causal objection to any
11:41:05 3 type of estimate that you simply could not attribute
11:41:12 4 any amount to the fact that someone smoked for that
11:41:17 5 second five year period?
11:41:19 6 A. Unless one were able to control for all other
11:41:22 7 confounding factors, yes, I would have the same
11:41:26 8 causal concern.
11:41:27 9 Q. And you would also have to control for all
11:41:31 10 synergistic effects, right?

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11:41:34 11 A. That's correct.
11:41:35 12 Q. Do you know of any way to determine the
11:41:54 13 probability that a certain percentage of smokers
11:42:01 14 would quit smoking if certain information about
11:42:07 15 smoking was disclosed to them?
11:42:14 16 A. I'll have to hear that one again.
11:42:16 17 MR. BORMAN: Object to the form of the
11:42:17 18 question.
11:42:18 19 BY MR. LOVE:
11:42:18 20 Q. Do you know of any way to determine the
11:42:21 21 probability that some percentage of smokers would
11:42:24 22 quit smoking if certain information was disclosed to
11:42:28 23 them?
11:42:29 24 MR. BORMAN: Again, same objection.
11:42:35 25 THE WITNESS: I haven't given it any

11:42:37 1 thought, but as I said, I think almost anything is
11:42:40 2 possible if you're willing to pay to collect the
11:42:43 3 information.
11:42:43 4 I presume there is a way, but I would have
11:42:48 5 to look into that very carefully.
11:42:50 6 BY MR. LOVE:
11:42:50 7 Q. At this point in time you don't know what type
11:42:53 8 of data you would need?
11:42:57 9 A. That's correct.
11:42:57 10 Q. Dr. Verhalen, I'll show you what we have marked
11:43:14 11 as Exhibit 3311, it's the expert report of Edward
11:43:20 12 Foster dated July 17, 1997 titled The Cost of Smoking
11:43:25 13 to the State of Minnesota and to Blue Cross and Blue
11:43:29 14 Shield of Minnesota.
11:43:33 15 Is that the Foster report that you received a
11:43:48 16 copy of sometime ago?
11:43:50 17 A. Yes.
11:43:55 18 Q. And that's the report that you've scanned, but
11:43:58 19 have not yet read; is that correct?
11:44:00 20 A. That's correct.
11:44:01 21 Q. If you'd turn to page 10 of that report you'll
11:44:44 22 see a discussion of the Manning study there.
11:44:49 23 A. Yes.
11:44:52 24 Q. Would you take a few minutes to take a look at
11:45:01 25 that? My question is going to be whether the study

11:45:04 1 that's discussed here is the same study that you
11:45:06 2 recall reading about earlier.
11:46:08 3 A. Do you want me to read the whole thing?
11:46:11 4 Q. Enough for you to determine if this is the same
11:46:14 5 study that you had read about previously.
11:46:17 6 A. Maybe. Some of it looks familiar, but I really
11:46:21 7 don't know.
11:46:21 8 Q. Would you look under the item number 2 on page
11:46:28 9 10, that statistical study based on individual
11:46:33 10 households?
11:46:35 11 Do you see that the basic data source was a Rand
11:46:40 12 Corporation Health Insurance Experiment?
11:46:44 13 A. Yes.
11:46:44 14 Q. And that that study looked at families in
11:46:49 15 Dayton, Ohio, Seattle, Washington, Fitchburg
11:46:55 16 Massachusetts, Charleston, South Carolina and two
11:46:59 17 rural counties, one in Massachusetts and one in South

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11:47:01 18 Carolina?
11:47:06 19 A. Yes.
11:47:07 20 Q. In your opinion would such a data set be
11:47:12 21 appropriate for estimating health care costs in
11:47:19 22 Minnesota?
11:47:20 23 A. I have my doubts, but I would really want to be
11:47:23 24 able to sit down and read everything that's said
11:47:26 25 about it, and I would want to read the Rand

11:47:30 1 Corporation document as well.
11:47:31 2 Q. Given that none of the data in the Rand study
11:47:36 3 came from the State of Minnesota, given your
11:47:42 4 requirements for synthetic estimation, how could it
11:47:46 5 possibly be reliably used to make a Minnesota
11:47:50 6 estimate?
11:47:51 7 A. I don't know. I'd want to take a look at it.
11:47:53 8 Q. If the primary purpose of the Manning study was
11:48:22 9 to see how variations of the health insurance program
11:48:27 10 would affect behavior, those enrolled in the
11:48:29 11 alternative plans, would you be concerned about using
11:48:32 12 such a study to estimate health care costs in
11:48:35 13 Minnesota?
11:48:36 14 A. On the surface of it, yes, I probably would.
11:48:40 15 Q. And if the Manning study excluded people over
11:48:44 16 sixty-two years of age would that cause you concern
11:48:47 17 about using that study to estimate health care costs
11:48:50 18 in Minnesota?
11:48:51 19 A. Same answer, it could.
11:48:53 20 Q. If the study also excluded families with incomes
11:49:15 21 greater than twenty-five thousand dollars, assuming
11:49:24 22 that would translate to eighty-eight thousand dollars
11:49:27 23 in '96 measures, would that cause you concern about
11:49:30 24 using the study to estimate health care costs in
11:49:39 25 Minnesota?

11:49:39 1 A. Same answer.
11:49:40 2 Q. And if the Manning study made any use of self
11:49:50 3 reported information would that also cause you
11:49:58 4 concern about using that?
11:50:01 5 A. It could.
11:50:01 6 Q. Do you believe that any estimate of health care
11:50:27 7 costs in Minnesota can be made without using actual
11:50:32 8 Minnesota data on health care costs?
11:50:37 9 A. You might be able to, but it depends on the use
11:50:40 10 you're going to put it to, whether or not it would be
11:50:43 11 rigorous enough.
11:50:44 12 Q. If you were going to use it to estimate smoking
11:50:50 13 attributable health care costs in this litigation.
11:50:54 14 A. In this litigation?
11:50:56 15 Q. Yes, sir.
11:50:57 16 A. No, I don't think so. It would require great
11:51:01 17 rigor.
11:51:01 18 Q. If you look at pages 7 and 8 of this exhibit,
11:51:52 19 3311, are you familiar with any of the equations that
11:52:02 20 are listed there?
11:52:02 21 A. I don't know. I haven't really studied them. I
11:52:08 22 may have seen them, but I am not a statistician. I
11:52:12 23 don't normally do this kind of work. This is what I
11:52:14 24 would have a statistician do.

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11:52:16 25 Q. So you don't have any expertise in using or

11:52:19 1 evaluating equations such as these?
11:52:22 2 A. Not without help from a statistician. I would consult a
11:52:30 3 statistician on that.
11:52:32 4 Q. As you read, scanned, this report of Dr. Foster,
11:53:03 5 Exhibit 3311, did you note any questions that you'd
11:53:08 6 like to follow up on or information that you'd like
11:53:10 7 to have about it?
11:53:12 8 A. No. I was just scanning it very quickly to see
11:53:15 9 what the general tenure of them was, what they were
11:53:18 10 including, what they were not including, not any
11:53:25 11 substantive review of anything. To me, scanning
11:53:28 12 means scanning.
11:53:28 13 Q. Based on your understanding of the general
11:53:31 14 tenure of this report do you believe that the
11:53:34 15 approach that Dr. Foster is using would provide any
11:53:41 16 estimate of smoking attributable health care costs in
11:53:45 17 Minnesota that would meet the degree of precision
11:53:48 18 that you would require in this litigation?
11:53:50 19 A. I am not in a position to say at this time.
11:53:52 20 MR. LOVE: Why don't we take a break.
11:58:05 21 (Recess taken.)
12:05:11 22 BY MR. LOVE:
12:05:11 23 Q. Dr. Verhalen, based on the descriptions of the
12:08:47 24 Manning study that we reviewed on pages 10 and 11 of
12:08:56 25 Dr. Foster's report, Exhibit 3311, excluding the fact

12:09:04 1 where the survey was conducted and so on, do you have
12:09:10 2 an opinion as to whether it is more or less reliable
12:09:13 3 for making estimates in Minnesota than NMES?
12:09:17 4 A. No. I can't make that judgment on the basis of
12:09:22 5 that review.
12:09:32 6 Q. With respect to NMES would you agree that the
12:09:46 7 NMES -- strike that. With respect to NMES would you
12:09:49 8 agree that the sign, administration and
12:09:52 9 interpretation of that survey was appropriately
12:09:55 10 controlled to ensure the objectivity of the survey?
12:10:06 11 A. Possibly. I would want to look at it again to
12:10:08 12 address specifically the subject of objectivity, but
12:10:12 13 it probably is. My recollection is nothing jumps
12:10:20 14 out.
12:10:20 15 Q. Would you agree that the experts who designed,
12:10:26 16 conducted and analyzed the survey were appropriately
12:10:27 17 skilled and experienced?
12:10:29 18 A. I have no way of knowing that.
12:10:30 19 Q. At the national level did NMES have an
12:10:41 20 appropriate identification of a universe or
12:10:46 21 population to do the survey?
12:10:54 22 A. I think it probably did, yes.
12:10:56 23 Q. And at the national level did the sampling frame
12:10:59 24 approximate the population?
12:11:06 25 A. It probably did. Again, it was -- its main

12:11:10 1 difficulty was the fact was that it was handled as
12:11:15 2 two separate pieces which may present a problem. I
12:11:20 3 would have to look at it very, very carefully.

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12:11:22 4 Q. That's your only qualifications about the
12:11:25 5 sampling frame?
12:11:26 6 A. Yes.
12:11:26 7 Q. Was the level of non-response in NMES a concern
12:11:34 8 for you?
12:11:35 9 A. Not particularly troublesome.
12:11:37 10 Q. Were the NMES questions framed to be clear,
12:11:49 11 precise and unbiased?
12:11:52 12 A. I think they might have been framed for that.
12:11:59 13 How successful they were is one of the main questions
12:12:01 14 I have, especially with respect to the self
12:12:04 15 administered questionnaire.
12:12:06 16 The question always remains whether or not
12:12:09 17 people are properly interpreting a question and
12:12:12 18 giving an appropriate response. You do the best you
12:12:15 19 can.
12:12:15 20 Q. Can you give me any examples of questions in
12:12:19 21 NMES that you think should have been framed
12:12:22 22 differently?
12:12:22 23 A. Not off the top of my head.
12:12:24 24 Q. Did you note any such questions in your expert
12:12:29 25 report?

12:12:29 1 A. No.
12:12:30 2 Q. Do you have any notes anywhere of any type about
12:12:34 3 any such questions?
12:12:35 4 A. No, I don't have any notes.
12:12:37 5 Q. Do you believe that NMES made appropriate
12:12:55 6 choices for using open ended and closed ended
12:13:01 7 questions in a survey?
12:13:01 8 A. I don't know about that.
12:13:04 9 I would want to look at the questionnaire from
12:13:05 10 the standpoint of a questionnaire designed
12:13:10 11 specifically with that in mind.
12:13:18 12 Q. Were the NMES interviews appropriately selected
12:13:24 13 and trained?
12:13:25 14 A. The presumption and hope is that they were, but
12:13:29 15 there is no assurance that they were uniformly
12:13:31 16 trained or that they uniformly conducted the
12:13:34 17 interviews, and that's one of the basic problems with
12:13:38 18 having two separate organizations to it.
12:13:40 19 Q. Have you seen any discussion of the selection
12:13:42 20 and training of the NMES interviewers?
12:13:46 21 A. I seem to recall seeing some right offhand. I
12:13:50 22 can't seem to recall much about it.
12:13:58 23 Q. Do you know whether Drs. Zeger, Wyant and Miller
12:14:23 24 have the skill and expertise to analyze the NMES
12:14:29 25 data?

12:14:30 1 A. I would presume they do.
12:14:31 2 Q. In your expert report under tab 4 you listed
12:15:05 3 deposition and trial testimony that you've given,
12:15:07 4 correct?
12:15:07 5 A. Yes.
12:15:08 6 Q. What time period did that cover?
12:15:10 7 A. From the day I retired in April of '95 up to
12:15:22 8 whatever the date was that I filed my report, the
12:15:24 9 25th of June.
12:15:25 10 Q. Prior to the time that had you retired had you

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12:15:32 11 testified at either deposition or trial?
12:15:35 12 A. I was deposed on something back in the very,
12:15:39 13 very early days of the Commission. I don't even
12:15:42 14 remember the subject matter, but it was before the
12:15:45 15 general counsel made a ruling that from that point on
12:15:49 16 employees of the commission could not be deposed.
12:15:54 17 Q. A ruling with which I'm sure you agreed?
12:15:55 18 A. I had no position one way or the other. It
12:15:59 19 didn't particularly bother me.
12:16:01 20 Q. Have you ever testified before any government
12:16:04 21 agency?
12:16:06 22 A. I have testified before the National Commission
12:16:12 23 on Product Safety when I was a member of the
12:16:18 24 Commission staff. I testified before the
12:16:21 25 Commissioner on bicycle injuries.

12:16:23 1 Q. What was the nature of your testimony there?
12:16:26 2 A. It was on the subject of high rise bicycles as a
12:16:31 3 proportion of total bicycles involved in accidents.
12:16:36 4 At the time the high rise was a new bicycle that had
12:16:39 5 come on to the scene from Southern California and
12:16:43 6 there were a large number of injuries that were being
12:16:46 7 reported in the fourteen hospitals that we had
12:16:50 8 reporting to us at that time where youngsters had
12:16:57 9 tried to jump curbs with their bikes, and because of
12:17:01 10 the small front wheel the bicycle just came to a dead
12:17:07 11 halt and they went over the handle bars.
12:17:09 12 Q. Had you done any statistical analysis of --
12:17:12 13 A. No, that was a descriptive testimony.
12:17:15 14 Q. Any other testimony before any government
12:17:18 15 agency?
12:17:19 16 A. No.
12:17:19 17 MR. LOVE: Would you mark this?
12:17:19 18 (Plaintiffs' Deposition Exhibit No. 3312 - article -
12:18:10 19 marked for identification.)
12:18:16 20 BY MR. LOVE:
12:18:16 21 Q. Dr. Verhalen, I'll show you what we have marked
12:18:19 22 as Exhibit 3312. It consists of an article in
12:18:30 23 Morbidity and Mortality Weekly Report titled State
12:18:36 24 and Sex Specific Prevalence of Selected
12:18:39 25 Characteristics - Behavioral Risk Factor Surveillance

12:18:43 1 System, 1994, 1995. And the first two pages of the
12:18:49 2 exhibit are some statistics that were taken from that
12:18:54 3 article.
12:18:56 4 I'll ask if you've seen that before, sir.
12:19:00 5 A. Yes, I did.
12:19:01 6 Q. Have you had a chance to review the statistics
12:19:06 7 on the first two pages of that exhibit?
12:19:08 8 A. Yes.
12:19:09 9 Q. Is it your understanding that the statistics
12:19:19 10 shown under the column called Minnesota show a -- the
12:19:26 11 prevalence value of those statistics in the State of
12:19:28 12 Minnesota during the time indicated, and in
12:19:32 13 parenthesis show the ninety-five percent confidence
12:19:38 14 interval for that statistic?
12:19:41 15 A. Yes.
12:19:41 16 Q. Is it also your understanding that under the All
12:19:45 17 State column that we see, the All State prevalence,

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12:19:49 18 but this time in parenthesis we see a confidence
12:19:56 19 based on plus or minus one standard deviation?
12:20:00 20 A. Correct.
12:20:00 21 Q. Is a plus or minus one standard deviation
12:20:06 22 confidence interval approximately a sixty-eight
12:20:13 23 percent interval?
12:20:14 24 A. That's roughly correct.
12:20:15 25 Q. That would be a narrower interval than the

12:20:20 1 ninety-five percent confidence interval, correct?
12:20:23 2 A. That's correct.
12:20:24 3 Q. Would you agree, Dr. Verhalen, that where all
12:20:35 4 the factors shown on these first two pages of Exhibit
12:20:42 5 3312 that there is at least some degree of overlap in
12:20:47 6 the confidence interval, the ninety-five percent
12:20:52 7 confidence interval, for Minnesota and the plus or
12:20:55 8 minus one standard deviation confidence interval for
12:20:59 9 all states?
12:20:59 10 A. Yes.
12:21:00 11 Q. Having reviewed these statistics have you come
12:21:15 12 to any conclusions as to their significance in terms
12:21:18 13 of showing similarity or difference between Minnesota
12:21:22 14 and the nation as a whole?
12:21:24 15 A. For these particular subject areas it would
12:21:30 16 suggest that in 1995 the differences probably were
12:21:35 17 not significant. They were not significant.
12:21:41 18 Q. Are there any of the items on these first two
12:21:50 19 pages of Exhibit 3312 that you would add to the list
12:21:58 20 of important factors that we discussed yesterday in
12:22:02 21 comparing Minnesota to the nation?
12:22:07 22 A. I could reasonably add all of them, but those
12:22:14 23 dealing with risk taking behavior, as I said
12:22:17 24 yesterday, I consider somewhat less important.
12:22:21 25 Q. Would that be the drinking statistic?

12:22:27 1 A. That's correct.
12:22:32 2 Q. So that would be less important than the other
12:22:36 3 statistics shown on this exhibit?
12:22:38 4 A. Probably.
12:22:38 5 Q. Did you review the -- any other portion of the
12:22:52 6 article that's part of Exhibit 3312?
12:22:57 7 A. Yes, I reviewed the entire exhibit.
12:23:00 8 Q. Did you find any information there that you
12:23:03 9 found to be significant in comparing Minnesota to the
12:23:07 10 nation?
12:23:07 11 A. Not where one could say it was necessarily
12:23:10 12 statistically significant, because one couldn't look
12:23:14 13 at the error margins in the national data.
12:23:20 14 The national data wasn't presented and I didn't
12:23:23 15 have the capability of generating that.
12:23:26 16 Q. Dr. Verhalen, I have a book that was on your
12:23:52 17 Minnesota bibliography list in your expert report.
12:23:59 18 I'm not going to mark it as an exhibit, but I would
12:24:02 19 like to show it to you.
12:24:04 20 It's titled Epidemiologic Methods. The authors
12:24:10 21 are Bryant MacMahon, Thomas Pugh, and Johannes Ipsen
12:24:18 22 published by Little Brown Company with a copyright
12:24:22 23 date of 1960.
12:24:26 24 Do you recognize this as being one of the books

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12:24:29 25 in your bibliography?

12:24:32 1 A. Yes, I do.
12:24:33 2 Q. Are you familiar with that book?
12:24:37 3 A. Yes. It was the textbook we used when I was
12:24:40 4 studying epidemiology at the Master's level.
12:24:44 5 Q. Is it an authoritative text on epidemiology?
12:24:50 6 A. It's a text on epidemiology.
12:24:56 7 Q. Is it a text that's commonly used by
12:25:01 8 epidemiologists?
12:25:02 9 A. It was at that time. There are probably newer
12:25:05 10 textbooks that are used today. Every professor wants
12:25:09 11 to make his share of the pie.
12:25:10 12 Q. At the time you were studying epidemiology it
12:25:12 13 was a standard text?
12:25:14 14 A. It was a text at the University of North
12:25:17 15 Carolina while I was working on my degree. I don't
12:25:20 16 know what was being used at other schools. I'm sure
12:25:24 17 it was used at Harvard. That's where the authors
12:25:28 18 were from.
12:25:28 19 Q. The authors were from Harvard University?
12:25:32 20 A. Yes.
12:25:33 21 Q. Do you know which item that is in your Minnesota
12:25:43 22 bibliography by chance?
12:25:46 23 A. Not offhand. I can find it here. Number 05,
12:26:12 24 205.
12:26:15 25 Q. Thank you. And that's the bibliography

12:26:21 1 that's --
12:26:21 2 A. Tab 6 I guess.
12:26:24 3 Q. -- tab 6 of your expert report, Exhibit 3301,
12:26:30 4 correct?
12:26:30 5 A. I think so.
12:26:31 6 Q. In the Texas litigation that we have discussed
12:27:31 7 somewhat have you been deposed in that case?
12:27:35 8 A. No.
12:27:35 9 Q. Have you read any deposition transcripts from
12:27:40 10 that case?
12:27:40 11 A. I'm sure I did, but I really don't recall with
12:27:45 12 respect to that case because at the same time
12:27:47 13 Mississippi was going on.
12:27:51 14 Q. Is V. Miller involved in both Mississippi and
12:27:58 15 Texas?
12:27:59 16 A. Yes.
12:27:59 17 Q. Since our discussion yesterday have you recalled
12:28:31 18 any other expert reports in this case that you've
12:28:34 19 scanned or even seen?
12:28:35 20 A. No, I hadn't thought about it.
12:28:39 21 MR. LOVE: Dr. Verhalen, subject to
12:29:26 22 the reservations I had mentioned previously about
12:29:29 23 reviewing your published articles and also what to do
12:29:37 24 in the case that the Court rules that we are allowed
12:29:39 25 to inquire between conversations between you and

12:29:44 1 defense counsel, I have no further questions. Thank
12:29:47 2 you.
12:29:47 3 MR. BORMAN: No questions. We will read and

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12:29:49 4 sign, and as I said earlier we would like a hard copy of
12:29:54 5 the deposition please.
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1 C E R T I F I C A T E
2
3
4 I, NANCY K. JOHNS, hereby certify that I am
5 qualified as a verbatim shorthand reporter; that I
6 took in stenographic shorthand the testimony of
7 ROBERT D. VERHALEN, M.D. P.H. at the time and place
8 aforesaid; and that the foregoing transcript
9 consisting of pages 217 through 318 through is a true
10 and correct, full and complete transcription of said
11 shorthand notes, to the best of my ability.
12 Dated at Minneapolis, Minnesota, this 8th
13 day of September, 1997.
14
15
16
17 _____
18 Nancy K. Johns, Notary Public
19 Hennepin County, Minnesota
20 My commission expires January 31, 2000.
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24
25

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1 C E R T I F I C A T I O N
2 I, ROBERT VERHALEN, the deponent, hereby
3 certify that I have read the foregoing transcript
4 consisting of pages 217 through 317, and that said
5 transcript is a true and correct, full and complete
6 transcription of my deposition except:
7
8
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10
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ROBERT D. VERHALEN, M.D. P.H
Deponent

Sworn and subscribed to before me this
day of , 1997.

Notary Public
My commission expire

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